PONY

Maths

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Theme 1 Number Sense and Operations

Unit 1 Place Value

Lesson 1

Digit, Numeral and Number

Learning Objectives:

By the end of this lesson, the student will be able to:

- Explain the difference between Digit, Numeral and Number.
- Discuss how the place value of a number can change.

Lesson 2

Really Big Numbers!

Learning Objectives:

By the end of this lesson, the student will be able to:

- Recognize all place values of integers up to one billions.
- Explain how the value of a number changes based on its place within the number.

Lesson 3

Changing Values

Learning Objectives:

By the end of this lesson, the student will be able to:

- Explain how the value of a digit changes when it moves to the left in the integer.
- Describe the patterns he noticed when values change.

Lesson 4

Comparing Values

Learning Objectives:

By the end of this lesson, the student will be able to:

- Explain the relationship between the place value of a certain number and the place value of another number to the left of it.
- Use multiplication to compare place values.

Lesson 5

Many Ways to Write

Learning Objectives:

By the end of this lesson, the student will be able to:

- Write the Numerical Form in Standard Form, Word Form and Expanded Form.

Lesson 6

Composing and Decomposing

Learning Objectives:

By the end of this lesson, the student will be able to:

- Compose and decompose numerals into multiple formats.

Lesson 7

Comparing Really Big Numbers

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use place value to compare large numerical formulas.
- Use symbols to express numerical comparisons.

Lesson 8

Comparing Numbers in Multiple Forms

Learning Objectives:

By the end of this lesson, the student will be able to:

- Compare numbers in different forms.
- Describe strategies for comparing numbers in different forms.

Lesson 9

Descending and Ascending Numbers

Learning Objectives:

By the end of this lesson, the student will be able to:

- Arrange the numbers in different formats.
- Describe strategies for arranging numbers in different formats.

Lesson 10

Predicting the Unpredictable

Learning Objectives:

By the end of this lesson, the student will be able to:

- Explains Front-end Estimation Strategy .
- Uses Front-end Estimation Strategy to round large numbers.

Lesson 11

Rounding Rules

Learning Objectives:

By the end of this lesson, the student will be able to:

- Apply different strategies for rounding numbers.
- Discuss which estimation is more accurate, the Front-end or Rounding Estimation.

Concept 1.1 Reinforcing Place Value

Lesson 1

Digit, Numeral and Number

Digit

It is a single symbol used to make numerals. Digits are limited, starting from the digit 0 and ending with the digit 9 (Ten digits: 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9).

Number

It is an amount related to the numeral and consists of one or more digits. The numbers are unlimited and endless.

Numeral

It is a symbol or name that stands for a number. Examples: 3, 49 and twelve are all numerals.

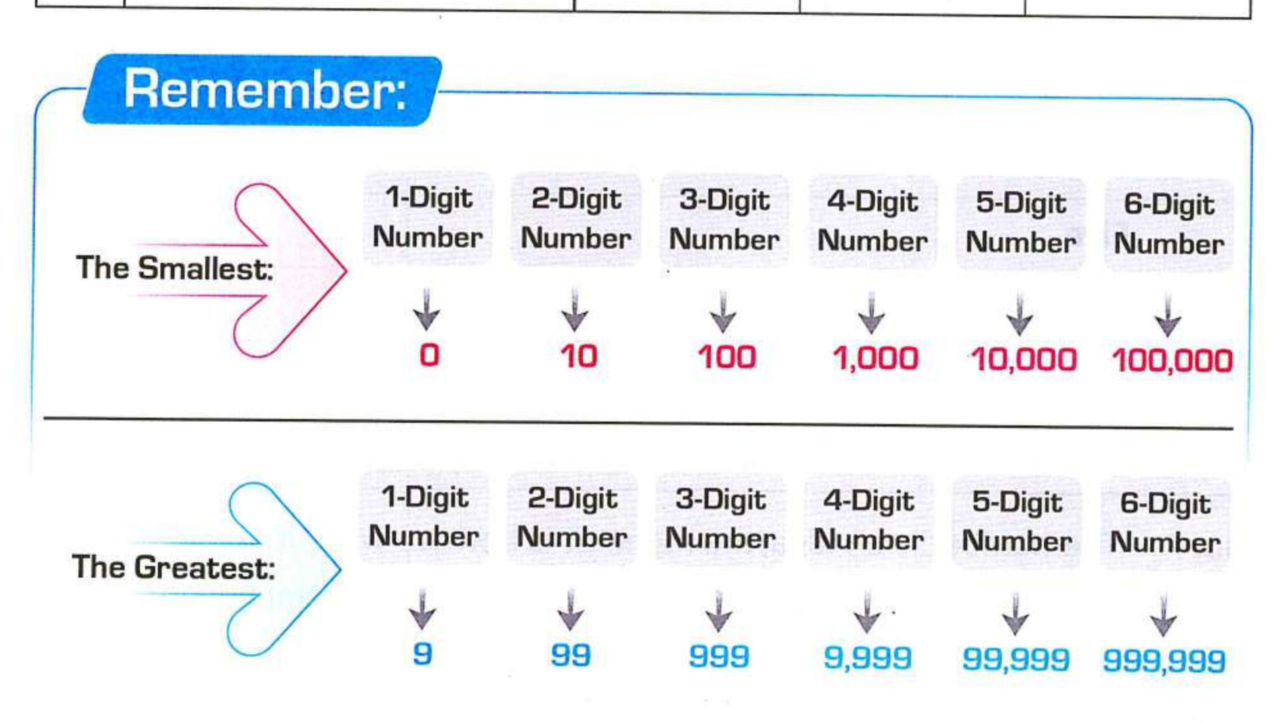
- **The following table shows examples of Digits, Numbers and Numerals:**

	Digit	Number	Numeral
7	✓	✓	✓
25		✓	✓
Five			✓
3	✓	✓	✓
256		✓	✓
Seventy three			✓

So,
- The number is an idea, the numeral is how we write it.
- All digits are numbers (a 1-digit-number), not all numbers are digits.
- All digits and numbers can be called numerals.

1 Write each number in the appropriate column. (Some numbers may belong to more than one column).

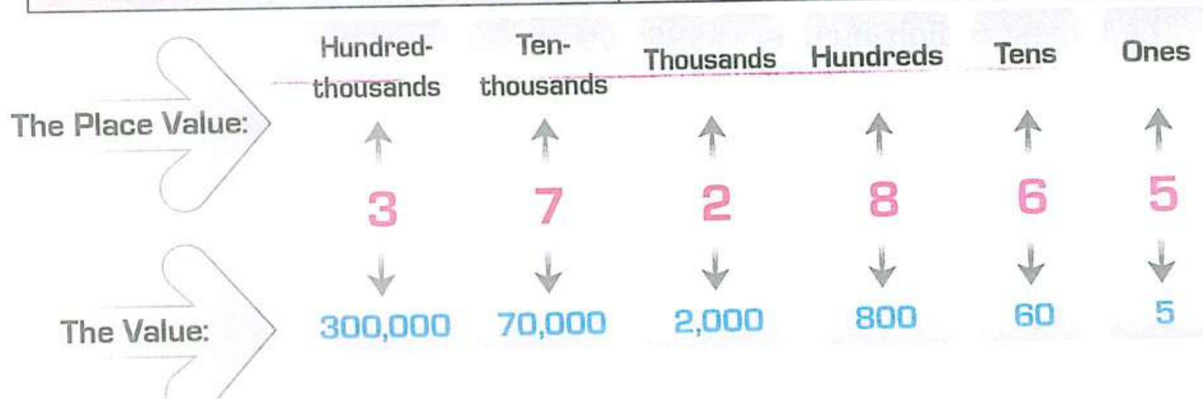
		Digit	Number	Numeral
a	369	....	....	....
b	24	....	....	....
c	9	....	....	....
d	Forty six	....	....	....
e	2,000	....	....	....
f	6,330,265	....	....	....
g	Eight	....	....	....
h	7	....	....	....
i	88	....	....	....
j	0	....	....	....
k	Three hundred seventeen	....	....	....
l	Ninety	....	....	....



The Place Value

- In the following number: 372,865

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
3	7	2	8	6	5



2 Write the greatest and the smallest numbers that can be formed from the digits (5, 7, 9, 0 and 4).

– The greatest number: ....

– The smallest number: ....

3 Write the Place value of the digit (4) in each of the following:

ⓐ 545,222 : ....

ⓑ 423,500 : ....

ⓒ 12,045 : ....

ⓓ 23,466 : ....

ⓔ 25,124 : ....

4 Circle the appropriate symbol to compare the numbers:

	First Number	Comparison Symbol	Second Number
ⓐ	54,336	< = >	45,336
ⓑ	900,900	< = >	99,000
ⓒ	56,002	< = >	50,602
ⓓ	4,500	< = >	4,500

Really Big Numbers!

We Previously know that:

- The **largest 6-digit-number** is 999,999.
- **It is read as:** Nine hundred ninety-nine thousand, nine hundred ninety-nine.
- We can find the number that comes **just after** it by adding the number "1", as follows:

	Numerical period			Numerical period		
Millions	Thousands			Ones		
	Hundreds	Tens	Ones	Hundreds	Tens	Ones
	9	9	9	9	9	9
						1 +
1	0	0	0	0	0	0

- The **resulting number** is 1,000,000 and is read as **"One million"**.

So, **We know that there is a numerical period called Millions, followed by another numerical period called Billions, as follows:**

Numerical period	Numerical period			Numerical period			Numerical period		
Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones

Example (1):

Use the following Place Value table to read the shown number:

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
		3	5	8	9	1	4	5	5
	35 Millions			891 Thousands			455		

– The previous number is read **from left to right** so that **each number** is followed by **the name of the period**:

Thirty-five **million**, eight hundred ninety-one **thousand**, four hundred fifty-five.

Example (2):

Use the following Place Value table to read the shown number:

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
	8	1	5	5	2	0	0	2	1
	815 Millions			520 Thousands			21		

– The previous number is read as:

Eight hundred fifteen **million**, five hundred twenty **thousand**, twenty one.

Example (3):

Use the following Place Value table to read the shown number:

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
3	9	9	0	7	0	2	5	7	1
3 Billions	990 Millions			702 Thousands			571		

– The previous number is read as:

Three **billion**, nine hundred ninety **million**, seven hundred and two **thousand**, five hundred seventy-one.

1 Use the following Place Value table to read the shown number:

ⓐ

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
		2	7	2	5	4	9	8	5
....	....			....			....		

– The previous number is read as: ....

....

ⓑ

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
1	3	9	0	4	0	2	6	5	0
....	....			....			....		

– The previous number is read as: ....

....

2 Write the following numbers: (In Standard Form):

ⓐ 45 Millions + 120 Thousands + 123 = ...

ⓑ 259 Millions + 24 Thousands = ...

ⓒ 275 Millions + 299 = ...

ⓓ 9 Billions + 109 Millions + 56 Thousands + 2 = ...

ⓔ 3 Billions + 215 Thousands + 28 = ...

3 Complete the following:

ⓐ 9,445,325 = ... Millions + ... Thousands + ...

ⓑ 925,023,007 = ... Millions + ... Thousands + ...

ⓒ 24,000,305 = ... Millions + ... Thousands + ...

ⓓ 6,025,007,000 = ... Billions + ... Millions

+ .... Thousands + ...

ⓔ 8,029,000,028 = ... Billions + ... Millions

+ .... Thousands + ...

4 In each of the following numbers, find the Place Value of the digit 7:

ⓐ In the number 35,785,692, the digit 7 is in the .... place.

ⓑ In the number 2,522,573, the digit 7 is in the .... place.

ⓒ In the number 7,325,864 125, the digit 7 is in the .... place.

ⓓ In the number 125,000,347, the digit 7 is in the .... place.

ⓔ In the number 27,000,210, the digit 7 is in the .... place.

ⓕ In the number 2,700,200,300, the digit 7 is in the .... place.

5 Underline the digit in the Ten-millions place:

ⓐ 2,587,924,388.

ⓑ 25,348,975.

ⓒ 962,525,252.

6 Underline the digit in the Thousands place:

ⓐ 345,823,622.

ⓑ 9,909,909.

ⓒ 253,332.

Lesson 3

Changing Values

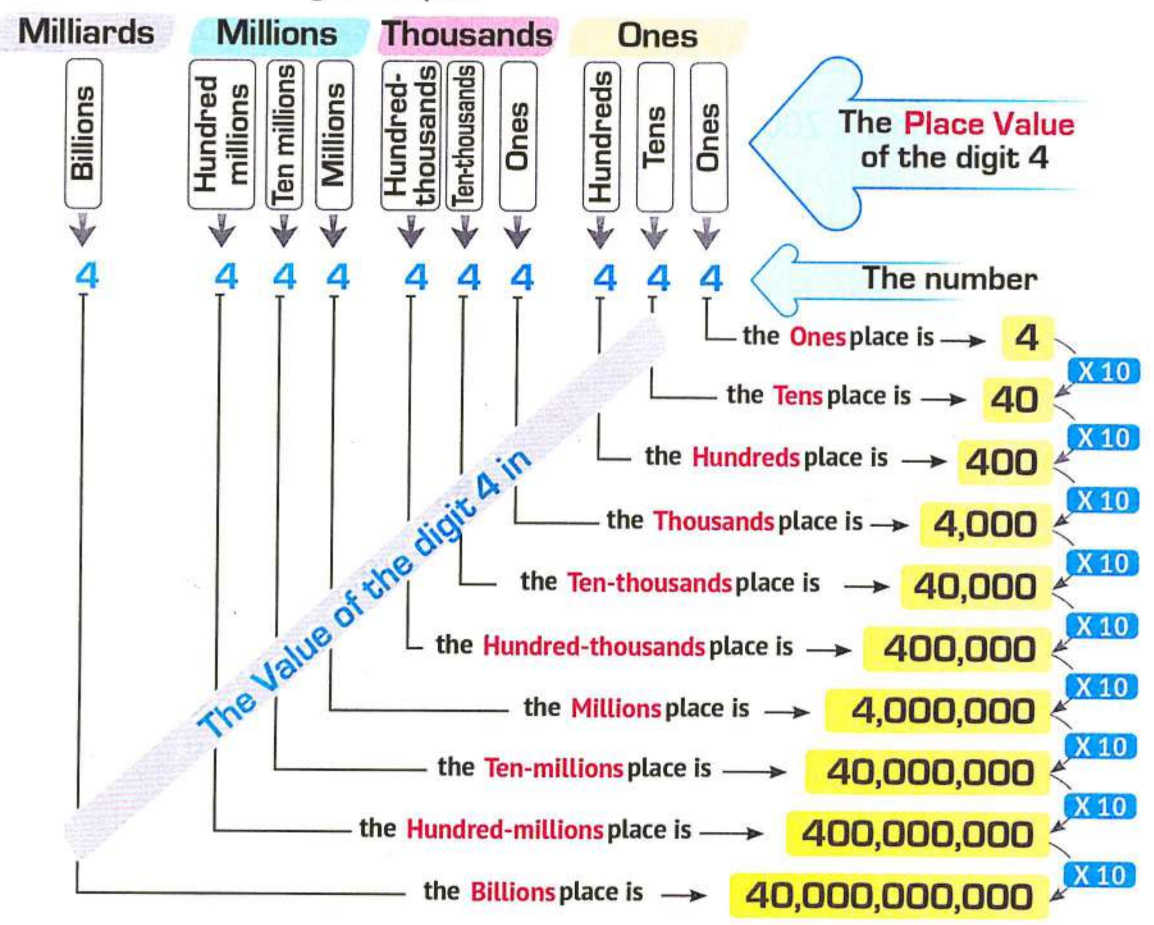
Remember:

When Multiplying by 10:

- We can simply add "0" to the number to find the product:

3 X 10 = 30	12 X 10 = 120
30 X 10 = 300	120 X 10 = 1,200
300 X 10 = 3,000	1,200 X 10 = 12,000
3,000 X 10 = 30,000	12,000 X 10 = 120,000

- The value of the number changes depending on where it is located, as in the following example:



We notice that, the value of the digit (4) increases by 10 times when it moves to the left.

Notes

- 1 Ten = 10 Ones.
- 1 Hundred = 10 Tens.
- 1 Thousand = 10 Hundreds.
- 1 Ten-thousand = 10 Thousands.
- 1 Hundred-thousand = 10 Ten-thousands.
- 1 Million = 10 Hundred-thousands.
- 1 Ten-million = 10 Millions.
- 1 Hundred-millions = 10 Ten-millions.
- 1 Billions = 10 Hundred-millions.

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones

X 10 X 10 X 10 X 10 X 10 X 10 X 10 X 10 X 10

1 Find the Value and the Place Value of the underlined digit in the following:

	Number	Value	Place Value
a	252,987,65$\underline{4}$	....	....
b	9,126,63$\underline{2}$,486	....	....
c	1,91$\underline{7}$,371,394	....	....
d	2,790,004,$\underline{5}$21	....	....
e	7,698,$\underline{0}$56,107	....	....
f	$\underline{9}$,126,632,509	....	....

2 Complete the following:

a) The value of the digit 3 in the Hundreds place is ....

b) The value of the digit 7 in the Ten-millions place is ....

c) 50 Tens = ...

d) 60 Ten-thousands = ...

e) 50 Hundreds = ... Tens

f) 800 Hundreds = ... Thousands

Comparing Values

Notes

- **10** = 1 Tens.
- **100** = 1 Hundred = 10 Tens.
- **1,000** = 1 Thousand = 10 Hundreds = 100 Tens.
- **10,000** = 10 Thousands = 100 Hundreds = 1,000 Tens.
- **100,0000** = 100 Thousands = 1,000 Hundreds = 10,000 Tens.
- **1,000,000** = 1 Million = 1,000 Thousands = 10,000 Hundreds = 100,000 Tens.
- **10,000,000** = 10 Millions = 10,000 Thousands = 100,000 Hundreds = 1,000,000 Tens.
- **100,000,000** = 100 Millions = 100,000 Thousands = 1,000,000 Hundreds = 10,000,000 Tens.
- **1,000,000,000** = 1 Billion = 1,000 Millions = 1,000,000 Thousands. = 10,000,000 Hundreds = 100,000,000 Tens.

1 Complete the following:

a) 50,000 = ... **Hundreds**.

b) 6,000,000 = ... **Thousands**.

c) 8,000 **Millions** = ... **Billions**.

d) 1,000 **Thousands** = ... **Hundreds**.

e) The **place** in which the digit 3 is located with a value equal to 10 times the digit 3 in the Ten-thousands place is ....

f) The **place** in which the digit 4 is located with a value equal to 100 times the digit 4 in the Ones place is ....

g) The **value** of the digit in the Thousands place is equal to .... times the digit in the Tens place.

h) The **value** of the digit in the Millions place is equal to .... times the digit in the Ten-thousands place.

2 Complete the following (as in the example):

Ex. (3 Hundreds, 5 Ones) X 100 = 305 X 100 = 30,500

a (4 Tens, 3 Ones) X 10 = ...

b (2 Hundreds, 3 Tens) X 100 = ...

c (5 Thousands, 6 Hundreds) X 1,000 = ...

d (9 Ten-thousands, 8 Hundreds, 5 Ones) X 10 = ...

e 9 Hundreds X 1,000 = ...

f 24 Thousands X 100 = ...

g 25 Millions X 10 = ...

3 Complete the following:

a The smallest 8-digit-number is ....

b Million is the smallest number formed from .... digits.

c The largest 10-digit-number is ....

d The largest 7-different-digit-number is ....

e The number that is equal to 100 times the number 506 is ....

f The largest number formed from the digits 3, 7, 0, 8, 1, 9, 4, 2 is

....

g The smallest number consisting of the digits 3, 9, 0, 5, 4, 8, 7, 6 is

....

h The largest even number formed from 7 digits is ....

i The value of the digit 6 in the number 24,687,922 is ....

j The place value of the digit 4 in the number 892,546,317 is

....

Many Ways to Write

Standard Form:

It is a way of using **digits** to write a number.

Ex. 35,254

Expanded Form:

It is a way of using **Place Value** to write a number.

Ex. 30,000 + 5,000 + 200 + 50 + 4

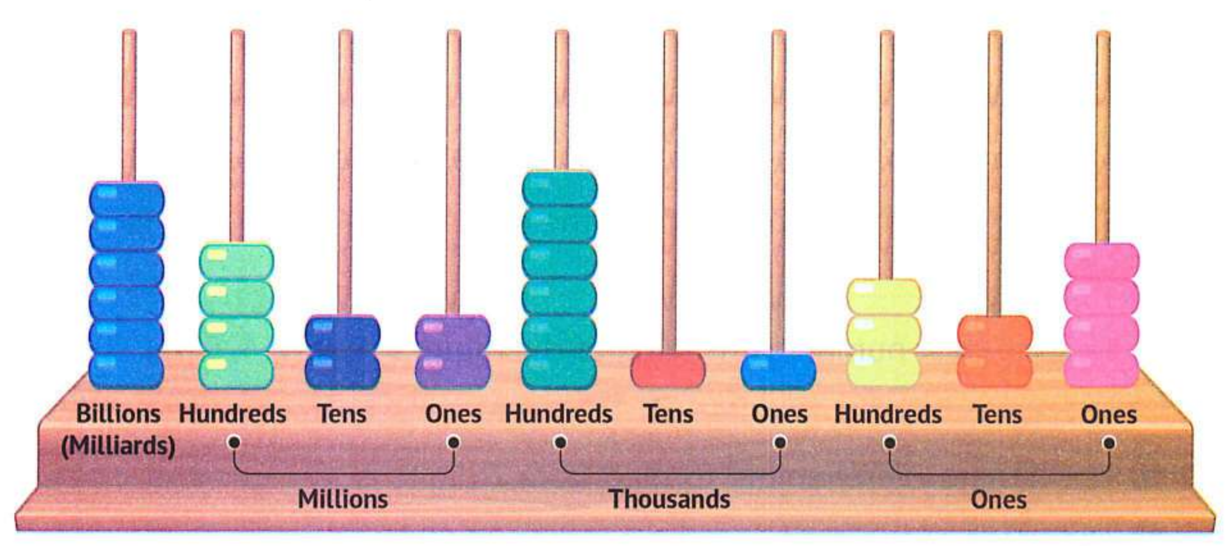
Word Form:

It is a way of using **words** to write a number.

Ex. Thirty-five thousand, two hundred fifty-four.

Example (1):

Write the number represented on the abacus in different forms:



- **Standard Form** : 6,422,611,324
- **Expanded Form**: 6,000,000,000 + 400,000,000 + 20,000,000 + 2,000,000 + 600,000 + 10,000 + 1,000 + 300 + 20 + 4
- **Word Form** : Six billion, four hundred twenty two million, six hundred eleven thousand, three hundred twenty-four.

Example (2):

Use the following Place Value table to write the number in different forms:

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
4	9	0	2	0	7	0	0	1	5
4 Billions	902 Millions			70 Thousands			15		

- Standard Form : 4,902,070,015
- Expanded Form: 4,000,000,000 + 900,000,000 + 2,000,000 + 70,000 + 10 + 5
- Word Form : Four billion, nine hundred two million, seventy thousand, fifteen.

1 Write the following numbers in the Word Form:

ⓐ 17,200,523: ....

....

....

....

ⓑ 100,020,045: ....

....

....

....

ⓒ 20,000,000 + 100,000 + 400 + 50 + 9: ....

....

....

....

ⓓ 7,000,000,000 + 50,000 + 200: ....

....

....

....

2 Write the following numbers in Standard Form:

ⓐ Five million, twenty-five thousand, two hundred three: ....

ⓑ Three billion, six million, four thousand, four: ....

ⓒ 9,000,000,000 + 40,000,000 + 80,000 + 200 + 6 = ...

ⓓ 7,000,000,000 + 500,000 + 200 = ...

3 Write the Expanded Form of the following numbers:

ⓐ 40,300,102 = ...

ⓑ 7,000,080,006 = ...

ⓒ Seven billion, fifty thousand, two hundred = ...

....

ⓓ One hundred fifty million, twenty-nine thousand, three hundred sixteen =

....

4 Complete the following table:

	Standard Form	Word Form	Expanded Form
ⓐ	203,500,200	....	....
ⓑ	....	Five billion, four million, nineteen thousand, six hundred seventy-five	....
ⓒ	....	....	100,000,000 + 20,000,000 + 90,000 + 300 + 8

Composing and Decomposing

– Decomposing Numbers (Expanded Notation), by using the following Place Value table:

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
4	9	7	5	3	1	8	6	4	2

Notes

- The digit 2 is in the Ones place and its value is 2 = (2 X 1)
- The digit 4 is in the Tens place and its value is 40 = (4 X 10)
- The digit 6 is in the Hundreds place and its value is 600 = (6 x 100)
- The digit 8 is in the Thousands place and its value is 8,000 = (8 X 1,000)
- The digit 1 is in the Ten-thousands place and its value is 10,000 = (1 X 10,000)
- The digit 3 is in the Hundred-thousands place and its value is 300,000 = (3 X 100,000)
- The digit 5 is in the Millions place and its value is 5,000,000 = (5 X 1,000,000)
- The digit 7 is in the Ten-millions place and its value is 70,000,000 = (7 X 10,000,000)
- The digit 9 is in the Hundred-millions place and its value is 900,000,000 = (9 X 100,000,000)
- The digit 4 is in the Billions place and its value is 4,000,000,000 = (4 X 1,000,000,000)

So, Composing Numbers: 4,975,318,642

Decomposing Numbers (Expanded Notation):

(4 X 1,000,000,000) + (9 X 100,000,000) + (7 X 10,000,000) +

(5 X 1,000,000) + (3 X 100,000) + (1 X 10,000) + (8 X 1,000) + (6 X 100)

(4 X 10) + (2 X 1)

1 Use the following **Place Value** table to compose and decompose the numbers:

a

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
8	0	2	7	0	5	0	0	0	6

1. Composing the Number: ....

2. Decompósing the Number (Expanded Notation):

....

....

b

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
....	....	....	....	....	....	....	....	....	....

1. Composing the Number: ....

2. Decomposing the Number (Expanded Notation):

(6 X 1,000,000,000) + (9 X 100,000) + (2 X 10,000) + (5 X 100) + (9 x 10)

c

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
....	....	....	....	....	....	....	....	....	....

1. Composing the Number: 20,014,023.

2. Decomposing the Number (Expanded Notation):

....

....

2 Compose the following numbers:

ⓐ $(8 \times 10,000,000) + (7 \times 10,000) + (2 \times 10) + (1 \times 1)$

= ....

ⓑ $(2 \times 1,000,000,000) + (9 \times 10,000) + (8 \times 1,000) + (5 \times 100)$

= ....

ⓒ 900,000,000 + 200,000 + 50,000 + 200 + 9

= ....

3 Write the following numbers in Expanded Form:

ⓐ 67 millions, 125 thousands, 12 = ...

....

ⓑ 7,024,650: ....

....

ⓒ Seventy five million, thirty thousand, four hundred sixty:

....

....

4 Write the following numbers in the Expanded Notation:

ⓐ Six billion, nine hundred million, ten thousand, four.

....

....

ⓑ Eight million, seventy thousand, two hundred.

....

....

ⓒ 10,200,548. ....

....

ⓓ 2 million, 200 thousand, 57. ....

....

Concept 1.2 Using Place Value

Comparing Really Big Numbers

– To compare two numbers, do the following:

First: If the number of digits of each number is different

The number that has more digits is the largest

210,106 (Six digits) **81,016** (Five digits)

Second: If the number of digits of each number is equal

Compare the value of the digits of the two numbers from left to right:

Example:

ⓐ **245,568 < 567,984**

⇒ Because the value of the digit 5 is **greater than** the value of the digit 2.

ⓑ **78,620 > 76,902**

⇒ Because the value of the digit 8 is **greater than** the value of the digit 6.

ⓒ **952,105 < 958,601**

⇒ Because the value of the digit 8 is **greater than** the value of the digit 2.

1 Choose the suitable symbol to compare:

a	780,215,564	> or = or <	770,215,564
b	56,242,980	> or = or <	56,224,980
c	88,995	> or = or <	550,882
d	1,000,600	> or = or <	235,450
e	7,000,546	> or = or <	7,000,546

2 Answer the following:

a Write a number in the Hundred-thousands place less than (<) 793,612.

....

b Write a number in the Hundreds place greater than (>) 289.

....

c Write a number in the Billions place less than (<) 6,300,000.

....

d Write a number in the Ten-thousands place greater than (>) 24,500.

....

3 Complete the following to make the comparison correct:

a .... < 223,445 < ....

b .... > 200,908 > ....

c 75,205,512 > .... > 70,258,456.

d 7,000,000,000 < .... < 8,000,000,000.

e .... < .... < 210,884,560.

Lesson 8

Comparing Numbers in Multiple Forms

The same comparison strategies mentioned in the previous lesson are applied. Also, different forms can be converted to the Standard Form to facilitate the comparison process.

Example: Compare using (< , = or >):

325,050,240

Three hundred twenty five million, fifty thousand, two hundred forty

325,500,240

300,000,000 + 20,000,000 + 5,000,000 + 500,000 + 200 + 40

1 Complete the following table using (< , = or >):

a	Three hundred twenty five thousand, fourteen	....	300,000 + 20,000 + 5,000 + 10 + 4
b	20,900,852	....	19,899,510
c	(9 X 1,000,000) + (3 X 10,000) + (9 X 1,000) + (8 X 100) + (7 x 10)	....	90,000,000 + 30,000 + 9,000 + 800 + 70
d	2,000,500,250	....	Two billion, five hundred million, two hundred fifty thousand
e	Nine billion	....	(9 X 100,000,000) + (9 X 10,000,000) + (9 X 1,000,000)

2 Complete with a numeral in Standard Form:

ⓐ 7,225,547 < ....

ⓑ 12,125,250 > ....

3 Complete with a numeral in Expanded Form:

ⓐ 100,258,963 < ....

....

ⓑ 20,300,520 > ....

....

4 Complete with a numeral in Expanded Notation:

ⓐ 20,000 < ....

....

ⓑ 7,000,000 > ....

....

5 Complete with a numeral in Word Form:

ⓐ 200,350 < ....

....

ⓑ 2,200,200 > ....

....

Lesson 9

Descending and Ascending Numbers

Ascending Order:

It is the order of numbers from the **least** to the **greatest**.

Descending Order:

It is the order of numbers from the **greatest** to the **least**.

Example: **For arranging the following numbers:**

351,724 , 315,742 , 351,472 , 315,247

We compare **each digit** in the numbers from **left to right**.

351,724 , 315,742 , 351,472 , 315,247

If the first digits from the left are **equal**, we compare the next digits until we reach the **different** digits.

3 5 1,7 2 4 , 3 1 5,7 4 2 , 3 5 1,4 7 2 , 3 1 5,2 4 7

So, The ascending order : 315,247 , 315,742 , 351,471 , 351,724.

The descending order : 351,724 , 351,471 , 315,742 , 315,247.

1 Arrange the following numbers in a descending order:

ⓐ 520,000 , 205,000 , 502,000 , 250,000.

The order : .... , ... , ... , ...

ⓑ 364,250 , 643,205 , 346,205 , 436,250.

The order : .... , ... , ... , ...

2 Arrange the following numbers in an ascending order:

ⓐ 999,999 , 9,000,000 , 100,000 , 900,900.

The order : .... , ... , ... , ...

ⓑ 78,090 , 79,010 , 78,091 , 79,100 , 78,999.

The order : .... , ... , ... , ...

3 Arrange the following numbers in an ascending order (Numbers can be written using the Standard Form):

The order	Number	Standard Form
ⓐ	Three billion, ten million, two thousand, fifty.	....
ⓑ	Three billion, one hundred million, twenty thousand, five.	....
ⓒ	Three billion, one million, two hundred thousand, five hundred.	....
ⓓ	Three billion, one hundred million, two hundred thousand, one hundred.	....
ⓔ	Three billion, one million, two thousand, five.	....

4 **Arrange the following numbers in a descending order (Numbers can be written using the Standard Form):**

The order	Number	Standard Form
ⓐ	Four billion, sixty thousand, seven.	....
ⓑ	(4 X 1,000,000,000) + (6 X 100,000) + (7X10).	....
ⓒ	4,000,000,000 + 600,000 + 700.	....
ⓓ	4,000,006,700.	....
ⓔ	Four billion, six thousand, seventy.	....

Predicting the Unpredictable

Front-end Estimation Strategy:

To estimate a number, we replace all digits of the number with zeros. Except for the first number on the left, it remains the same without any increase or decrease.

Example: Front-end Estimation Strategy:

Number	Estimation
89,450	80,000
741,280	700,000
447,621,987	400,000,000

Number	Estimation
2,789	2,000
67,875,512	60,000,000
7,224,125,936	7,000,000,000

Complete the following table:

Number	Front-end Estimation
a 45,231,546	....
b Three billion, five hundred sixty million, nine hundred seven thousand, fifty five.	....
c 7,000,000,000 + 400,000,000 + 200,000 + 90	....
d (3 X 1,000,000) + (2 X 10,000) + (7 X 100) + (9 X 10)	....
e 14 million, 258 thousand, 635	....

Rounding Rules

Rounding

It is replacing a number with a simpler number that is close to the original number.

The Symbol (≈) is called "approximately equal".

Rounding Rules:

First: The Midpoint Strategy:

Example (1): Round the number 468 to the nearest ten:

From the number line, we notice that:

⇒ The number 468 is located between the numbers 460 and 470

⇒ And the midpoint between the two numbers is 465.

So, the number 468 is closer to the number 470.

468 ≈ 470 (to the nearest ten).

470
468
465
460

Example (2): Round the number 724 to the nearest hundred:

From the number line, we notice that:

⇒ The number 724 is located between the numbers 700 and 800.

⇒ And the midpoint between the two numbers is 750.

So, the number 724 is closer to the number 700.

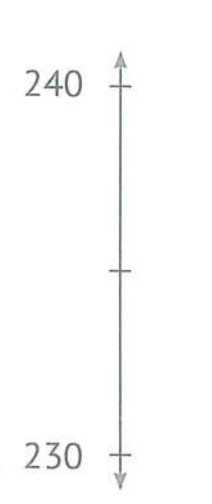
724 ≈ 700 (to the nearest hundred).

800
750
724
700

Note ***When the number is in the middle, it is closer to the largest number.***

1 Write down the midpoint of the number line. Then, locate each number on the number line. Round each number to the nearest **ten**:

ⓐ 238 ≈ ....



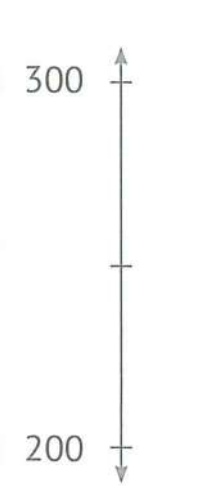
ⓑ 98 ≈ ....

100

90

2 Write down the midpoint of the number line. Then, locate each number on the number line. Round each number to the nearest **hundred**:

ⓐ 278 ≈ ....



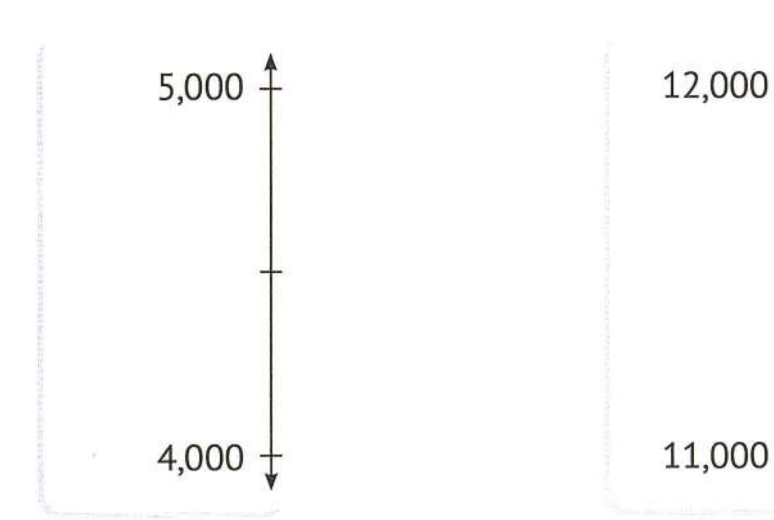
ⓑ 7,429 ≈ ....

7,500

7,400

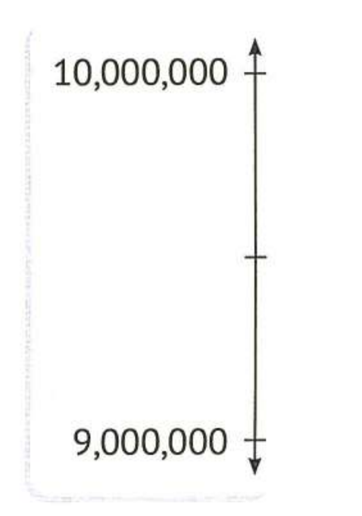
3 **Write down the midpoint of the number line. Then, locate each number on the number line. Round each number to the nearest thousand:**

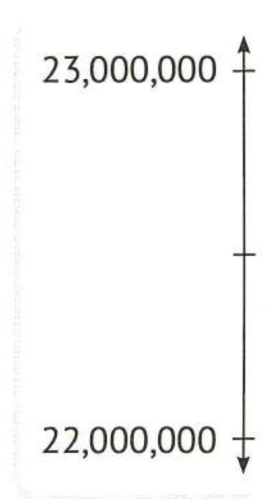
ⓐ 4,500 ≈ .... ⓑ 11,157 ≈ ....



4 **Write down the midpoint of the number line. Then, locate each number on the number line. Round each number to the nearest million:**

ⓐ 9,208,504 ≈ .... ⓑ 22,699,205 ≈ ....





Second: The Place Value Strategy:

When rounding with a given Place Value:

1. We select the digit in the place to be rounded.
2. We replace the digits in the places that precede the previously selected digit with zeros.
3. We look at the digit in the place preceding the place to be rounded directly.

If the digit is 0, 1, 2, 3, or 4, the number of the specified place remains unchanged.	If the digit is 5, 6, 7, 8 or 9, we add (1) to the number of the specified place.

Example (1): Round the following numbers to the nearest 10:

ⓐ 7 (2) 4 → 7 2 0

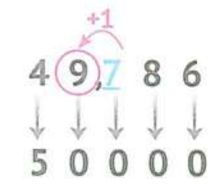
724 ≈ 720 (To the nearest 10).

ⓑ +1 4,3 (8) 6 → 4 3 9 0

4,386 ≈ 4,390 (To the nearest 10).

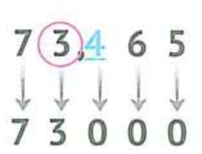
Example (2): Round the following numbers to the nearest 1,000:

ⓐ



49,786 ≈ 50,000
(To the nearest 1,000).

ⓑ



73,465 ≈ 73,000
(To the nearest 1,000).

Example (3): Round the following numbers to the nearest 1,000,000:

ⓐ 1 (5), 1 7 0 7 2 8
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
1 5 0 0 0 0 0 0

15,170,728 ≈ 15,000,000
(To the nearest 1,000,000)

ⓑ 5 (0), 9 3 3 2 0 6 (+1)
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
5 1 0 0 0 0 0 0

50,933,206 ≈ 51,000,000
(To the nearest 1,000,000)

1 **Round the following numbers to the nearest 10:**

ⓐ 255 ≈ ....
ⓑ 368 ≈ ....
ⓒ 73 ≈ ....
ⓓ 96 ≈ ....
ⓔ 12,257 ≈ ....
ⓕ 123,996 ≈ ....

2 **Round the following numbers to the nearest 100:**

ⓐ 750 ≈ ....
ⓑ 6,897 ≈ ....
ⓒ 71,915 ≈ ....
ⓓ 999 ≈ ....
ⓔ 29,990 ≈ ....
ⓕ 1,527 ≈ ....

3 **Round the following numbers:**

ⓐ 15,523 ≈ .... *(To the nearest 1,000)*
ⓑ 86,165 ≈ .... *(To the nearest 10,000)*
ⓒ 987,625 ≈ .... *(To the nearest 100,000)*
ⓓ 452,652,251 ≈ .... *(To the nearest 1,000,000)*
ⓔ 669,458,562 ≈ .... *(To the nearest 10 thousand)*
ⓕ 6,500,000,000 ≈ .... *(To the nearest billion)*

4 Find the result of each of the following, using the Front-end Estimation Strategy and the Rounding Rule Strategy.
Then, determine which of them is closer to the actual answer:

Question	Actual Answer	Front-end Estimation Strategy	Rounding Rule Strategy
Ex. 32 + 46	32 + 46 = 78	30 + 40 = 70 ( )	30 + 50 = 80 (✓)
a 12 + 58	…………	………… ( )	………… ( )
b 189 + 226	…………	………… ( )	………… ( )
c 287 + 285	…………	………… ( )	………… ( )
d 3,348 + 2,563	…………	………… ( )	………… ( )

Unit 2 Addition and Subtraction Strategies

Lesson 1

Properties of Addition and Subtraction

Learning Objectives:

By the end of this lesson, the student will be able to:

- Determine the properties of the operations of addition and subtraction.
- Explain the properties of addition and subtraction.
- Search to determine whether the properties of addition apply to subtraction or not.

Lesson 2

Mental Math Strategies

Learning Objectives:

By the end of this lesson, the student will be able to:

- Apply various Mental Math Strategies for addition and subtraction.
- Explain the importance of Mental Math Skills.

Lesson 3

Addition With Regrouping

Learning Objectives:

By the end of this lesson, the student will be able to:

- Add multi-digit integers.
- Use estimation to determine whether his/her answers are reasonable or not.

Lesson 4

Subtraction Strategies

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use Decomposing Numbers Strategy to subtract whole numbers consisting of several digits.
- Explain the importance of identifying patterns and relationships in mathematics.

Lesson 5

Subtraction With Regrouping

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use place value to perform subtraction using Standard Algorithm.
- Perform subtraction with renaming.
- Use estimation to check the reasonableness of their answers.

Lesson 6

Bar Models, Variables and Story Problems

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use symbols in equations to represent unknown values.
- Use bar models to represent and solve word problems.
- Determine the value of the variable in an equation.

Lesson 7

Solving Multistep Story Problems with Addition and Subtraction

Learning Objectives:

By the end of this lesson, the student will be able to:

- Solve multi-step word problems.
- Explain how they solve multi-step word problems.

Concept 2.1 Using Addition and Subtraction Strategies

Lesson 1

Properties of Addition and Subtraction

Properties of Addition

is zero

First: Neutral Element Property:

- **The Neutral Element: is the integer that can be added to any integer without changing the result.**

So, the sum of any whole number with the neutral element remains the same. The Additive Neutral Element is ((Zero))

Example: 24,256 + 0 = 24,256 , 0 + 3,648 = 3,648

Second: Commutative Property: الإبدال

- The sum of two numbers does not change by switching their order.

Example: 24 + 12 = 36 and 12 + 24 = 36

So, 24 + 12 = 12 + 24

Third: Associative Property: الدمج (الأقواس)

- If more than two numbers are added, we can add them in any order.

Example: 10 + 5 + 30 + 2

10 + 5 + 30 + 2	10 + 5 + 30 + 2	10 + 5 + 30 + 2
= (10 + 5) + 30 + 2	= 10 + (5 + 30) + 2	= 10 + 5 + (30 + 2)
= (15 + 30) + 2	= 10 + (35 + 5)	= (10 + 5) + 32
= 45 + 2	= 10 + 37	= 15 + 32
= 47.	= 47.	= 47.

So, (10 + 5) + 30 + 2 = 10 + (5 + 30) + 2 = 10 + 5 + (30 + 2).

1 Choose the correct answer:

ⓐ 5 + 3 = 3 + 5 "............................ Property"

(Neutral Element or Commutative or Associative)

ⓑ 54 + 0 = 54 "............................ Property"

(Neutral Element or Commutative or Associative)

ⓒ 7 + 3 + (4 + 9) = 7 + (9 + 3) + 4 "............................ Property"

(Neutral Element or Commutative or Associative)

ⓓ 254 + 328 = 328 + 254 "............................ Property"

(Neutral Element or Commutative or Associative)

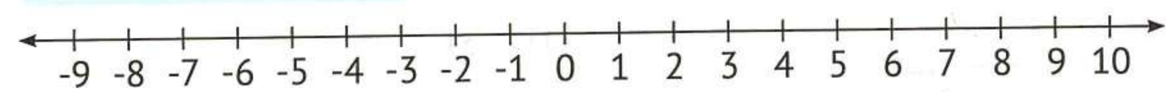
ⓔ 24,125 + 0 = 24,125 "............................ Property"

(Neutral Element or Commutative or Associative)

ⓕ (120 + 147) + 250 = 147 + (250 + 120) "............................ Property"

(Neutral Element or Commutative or Associative)

- **Negative Numbers:** Look at the following number line:



There are numbers less than **"Zero"** that are called: **Negative numbers.**

Ex. **(−1) is read as:** negative one, and it means a number **less than zero by one.**

(−6) is read as: negative six, and it means a number **less than zero by six.**

It will be studied in details later in higher grades.

Properties of Subtraction

First: Neutral Element Property:

- **When we subtract:** 5 − 0 = 5.
- **When we subtract:** 0 − 5 by using the number line, the difference is (−5).

So, **5 − 0 = 5** but **0 − 5 ≠ 5**

Therefore, Neutral Element Property is **not applicable** in the subtraction process.

Second: Commutative Property:

– **When we subtract:** 7 – 3 = 4.

– **When we subtract:** 3 – 7 by using the number line, the difference is (–4).

So, 7 – 3 ≠ 3 – 7

Therefore, Commutative Property is **not applicable** in the subtraction process.

Third: Associative Property:

– **When we subtract:** 9 – 6 – 3.

– **Subtraction can be done using parentheses, as follows:**

(9 – 6) – 3 = 3 – 3 = 0 or 9 – (6 – 3) = 9 – 3 = 6.

So, (9 – 6) – 3 ≠ 9 – (6 – 3)

Therefore, Associative Property is **not applicable** in the subtraction process.

2 **Complete the following and write the Addition Property used:**

ⓐ 5 + 3 = ...3...... + 5. "......Commufative...... Property"

ⓑ 28 + ...17...... = 17 + 28. "......Commutitive...... Property"

ⓒ 5 + 0 = ...5...... . "......neutral element...... Property"

ⓓ ......0...... + 215 = 215 . "......additive identity...... Property"

ⓔ (8 + 3) + 4 = 8 + (......3...... + 4). "......associative...... Property"

ⓕ (25 + 35) + 40 + 20 = ...25...... + (35 + 40) + ...20...... .

"......associative...... Property"

3 Find the result of each, then circle the property(ies):

Problem		Property
ⓐ 13 + 20 + 15 98	20 + 15 + 13 98	Associative Commutative Neutral Element
ⓑ 0 + 214 214	214 + 0 214	Associative Commutative Neutral Element
ⓒ (10 + 40) + 36 86	10 + (40 + 36) 86	Associative Commutative Neutral Element
ⓓ 20 + 0 + 15 35	15 + 0 + 20 35	Associative Commutative Neutral Element

Mental Math Strategies

First: Front-end Estimation Strategy:

- Where only the **largest place value** in each number (the first number on the left) is **added or subtracted** to obtain **an estimate** of the answer.

Example: 452 + 23 Will be → 400 + 20 = 420

628 – 29 Will be → 600 – 20 = 580

*The result **may not be close** to the actual answer.*

*This strategy is used if we want to get results that are **somewhat close** to the answer.*

Second: Rounding Strategy:

- Where previously studied Rounding Rules are applied to obtain a **more accurate estimate** of the answer.

Example: 452 + 23 Will be → 500 + 20 = 520

628 – 29 Will be → 600 – 30 = 570

*The result **may be somewhat close** to the actual answer.*

*This strategy is used if we want to get results **closer** to the actual answer.*

Third: Compensation Strategy:

- Where **one** of the two numbers is **replaced by a multiple of ten** and the **other number** is **adjusted** to keep the two numbers in balance.

Examples:

ⓐ $63 + 29$

(The nearest multiple of 10 to 29 is 30)
(We add 1 to 29 to be 30)
(We subtract 1 from 63 to be 62 to keep the balance)

$63 + 29$ → (-1), $(+1)$ → $= 62 + 30 = 92$

So, $63 + 29 = 92$

ⓑ $217 + 78$ → (-2), $(+2)$ → $= 215 + 80 = 295$

ⓒ $245 - 99$ → $(+1)$, $(+1)$ → $= 246 - 100 = 146$

ⓓ $885 - 58$ → $(+2)$, $(+2)$ → $= 887 - 60 = 827$

Notes

- In addition → Subtract to compensate.
- In subtraction → Add to compensate.

This strategy is used if we have a number close to the perfect Tens or the perfect Hundreds. Such as: 99, 58, 27, 289, 399, 158 ...

Fourth: Composing and Decomposing Strategy:

- Where the number that is subtracted or added is decomposed into **numbers** that are **easy to add or subtract mentally**. (We can use the **Expanded Form**).

Examples:

ⓐ $438 + 247$ *(Decompose the number 247 to 200 + 40 + 7)*

$= 438 + 200 + 40 + 7$ *(Add the Hundreds)*

$= 638 + 40 + 7$ *(Then add the Tens)*

$= 678 + 7 = 685$ *(Then add the Ones)*

ⓑ $583 - 57 = (583 - 50) - 7 = 533 - 7 = 526$

ⓒ $928 - 253 = (928 - 200) - 50 - 3 = (728 - 50) - 3 = 678 - 3$
$= 675$

This strategy is used to facilitate the solution of complex problems.

Fifth: Counting up Strategy (from the smallest number to the largest number):

- Where the number is counted **from the smallest number until we reach the largest number**, and the **result** is the **number of numbers** that have been counted.

Examples:

ⓐ 785 – 770 = 15 — *(We count after 770 until we reach 785)* ***So,*** *we find that the result is 15.*

ⓑ 90 - 86 = 4 — *(We count after 86 until we reach 90)* ***So,*** *we find that the result is 4.*

This strategy is used if the difference between the numbers is not so large that it is easy to count.

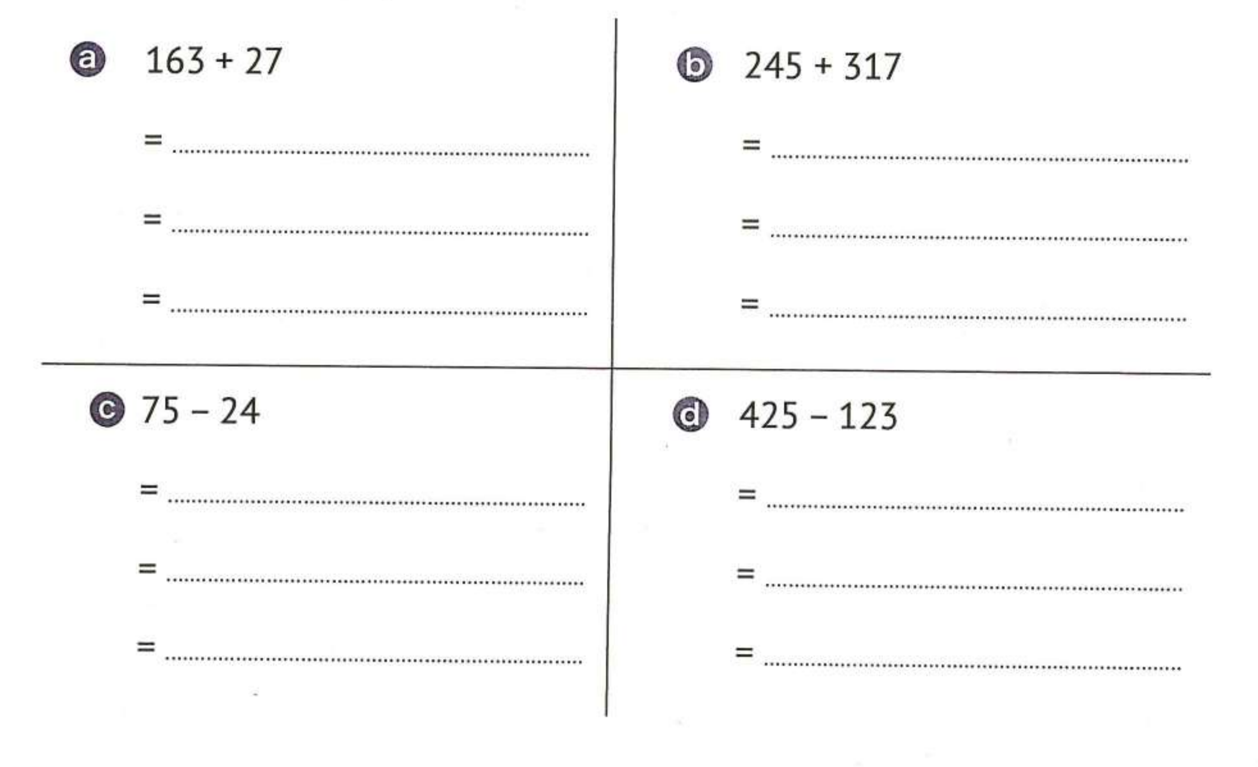
1 Use the **Front-end Estimation Strategy** and **Rounding Strategy** to find:

Problem	Front-end Estimation Strategy	Rounding Strategy
ⓐ 26 + 45	....	....
ⓑ 42 – 58	....	....
ⓒ 36 + 223	....	....
ⓓ 427 – 125	....	....
ⓔ 3,785 + 1,258	....	....

2 Use the **Compensation Strategy** to find the result (Show your steps):

a) 9 + 45	b) 28 + 73	c) 399 + 245
=	=	= ....
=	=	= ....
=	=	= ....
d) 37 – 8	e) 82 – 39	f) 347 – 199
=	=	= ....
=	=	= ....
=	=	= ....

3 Use the **Composing and Decomposing Strategy** to find the result (Show your steps):



a) 163 + 27	b) 245 + 317
=	= ....
=	= ....
=	= ....
c) 75 – 24	d) 425 – 123
=	= ....
=	= ....
=	= ....

4 Use Counting up Strategy to find the result:

ⓐ 45 – 37 = ...

ⓑ 122 – 113 = ...

ⓒ 871 – 776 = ...

5 Use the appropriate mental strategy to find the result (Show your steps). (Compensation or Composing and Decomposing or Counting up):

Problem	Mental Math Strategy	Solution
ⓐ 49 + 64		
ⓑ 83 – 57		
ⓒ 800 – 793		
ⓓ 456 – 127		
ⓔ 845 – 236		
ⓕ 101 + 98		

Lesson 3

Addition With Regrouping

Addition with Regrouping

- To add two numbers, we start by adding the **Ones**, then the **Tens**, then the **Hundreds**, and **so on** in order.
- Sometimes we need to **rename** (regroup).

Example: Add:

ⓐ 543,267 + 189,452 = **732,719**

Horizontally

Vertically

```
  1 1   1
  5 4 3,2 6 7
+ 1 8 9,4 5 2
-------------
  7 3 2,7 1 9
```

The Sum

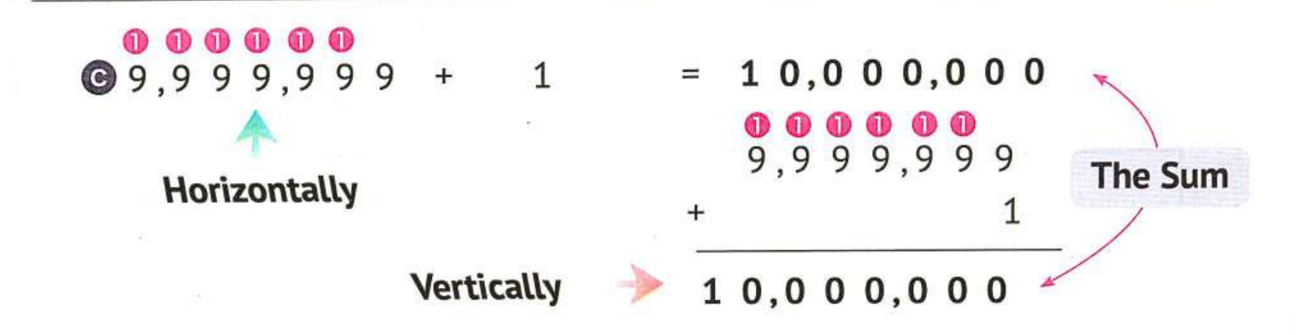
ⓑ 125,468 + 876,536 = **1,002,004**

Horizontally

Vertically

```
   1 1 1 1 1
   1 2 5,4 6 8
+  8 7 6,5 3 6
--------------
 1,0 0 2,0 0 4
```

The Sum



ⓒ 9,999,999 + 1 = **10,000,000**

Horizontally

Vertically

```
    1 1 1 1 1 1
    9,9 9 9,9 9 9
+               1
-----------------
 1 0,0 0 0,0 0 0
```

The Sum

1 Find the result of each of the following:

ⓐ 52,765
+ 37,135
....

ⓑ 8,675,568
+ 354,722
....

ⓒ 7,782,056
+ 2,217,944
....

ⓓ 4,836 + 6,274 = ...

ⓔ 999,999 + 6 = ...

ⓕ 963,452,793 + 47,058,207 = ...

Using Rounding Strategy to estimate the sum:

Notes: 4,528 + 3,834 = 8,362

- *By rounding the two numbers to the nearest 10:* 4,530 + 3,830 = 8,360
- *By rounding the two numbers to the nearest 100:* 4,500 + 3,800 = 8,300
- *By rounding the two numbers to the nearest 1 000:* 5,000 + 4,000 = 9,000

Looking at the outputs in each case, we find that the closest estimate to the actual output is to the nearest ten.

2 Complete the following table:

(Determine which of the estimates is closest to the actual solution)

Problem	To the Nearest 10	To the Nearest 100	To the Nearest 1,000
ⓐ 7,684 + 6,418	.... + ...	.... + ...	.... + ...
....	..................( )	..................( )	..................( )

Problem	To the Nearest 10	To the Nearest 100	To the Nearest 1,000
b 2,589 + 7,283	.... + ...	.... + ...	.... + ...
....	..........( )	..........( )	..........( )

3 An ant colony goes on a walk through the woods in search for food. On this journey, the ants form two bridges, the first bridge consists of 142 ants and the second bridge consists of 165 ants. What is the number of ants required for both bridges?
Explain your steps, then check the reasonableness of your answer.

Estimation (use one of the **Rounding Rules**):

....

Actual answer:

....

4 Ehab and Abeer travel from Aswan to Alexandria. They will travel 383 km on the first day to Assiut. On the second day, they will travel 462 km from Assiut to Alexandria.
How many kilometers will they travel in the two days?

Estimation (use one of the **Rounding Rules**):

....

Actual answer:

....

5 The speed of the fighter plane reaches 2,420 km per hour. If this plane moves for two hours maintaining this speed, how far will it travel?

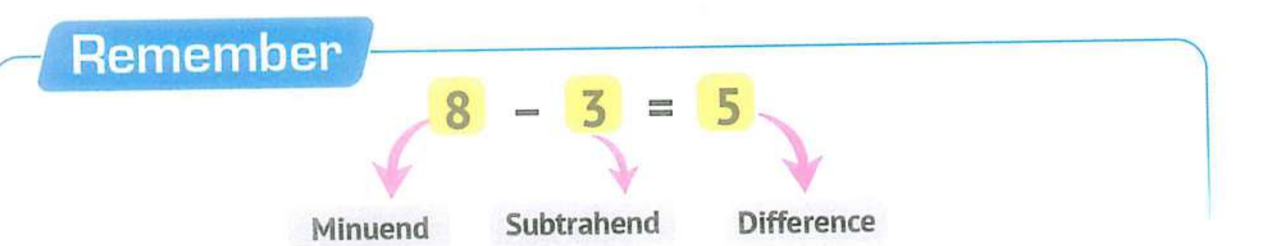
Estimation (use one of the **Rounding Rules**):

....

Actual answer:

....

Subtraction Strategies



Count down Strategy with Decomposition of Numbers:

We use a number line as follows:

First Step

Draw a number line without markings (open number line) and write the **minuend** number at the **right end** of the line.

Second Step

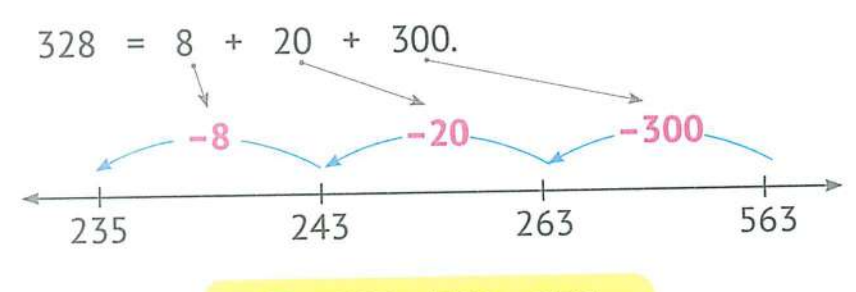
Decompose the **subtrahend** number into the **Expanded Form**.

Third Step

Count down the **minuend** using the Expanded Form of the **subtrahend**.

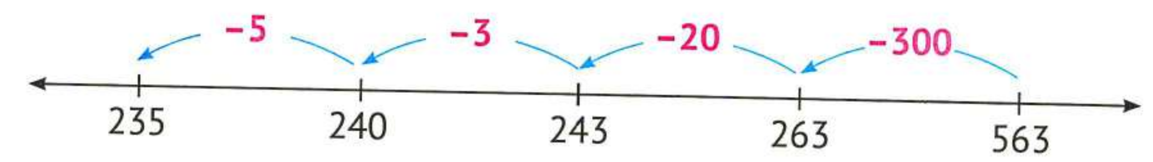
Example 1: Subtract 563 – 328.

Answer: 328 = 8 + 20 + 300.



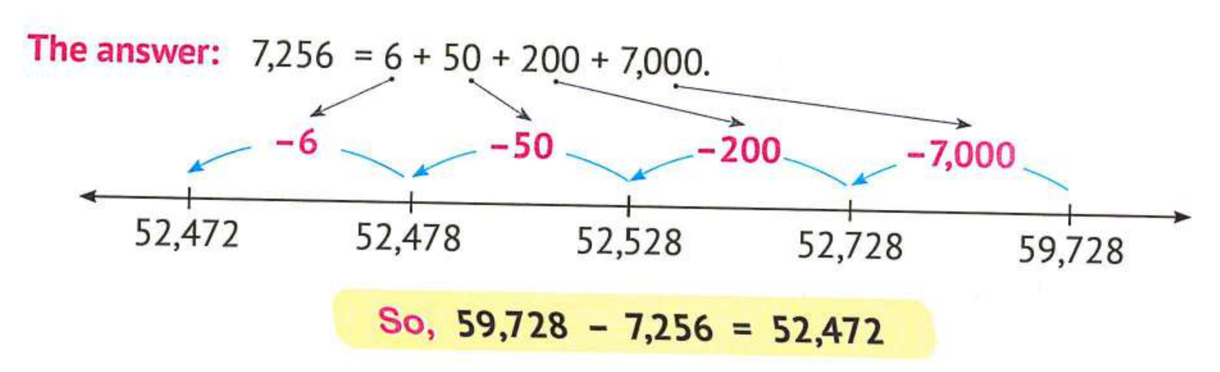
So, 563 – 328 = 235

And it can be solved in a **simpler way** by **dividing the number 8 into (5 + 3)** as follows:



Example 2: Subtract 59,728 − 7,256

The answer: 7,256 = 6 + 50 + 200 + 7,000.



So, 59,728 - 7,256 = 52,472

Count-on Strategy with Decomposition of Numbers:

We use a number line as follows:

First Step

Draw a number line without markings (open number line) and write the **subtrahend** number at the **left end** of the line.

Second Step

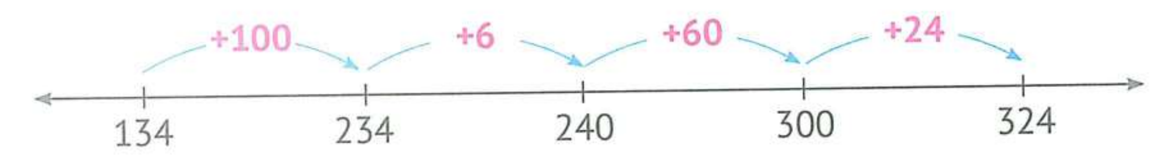
Decompose the **minuend** number into **easy numbers** or use the **Expanded** Form.

Third Step

Count up from the **subtrahend** number to the **minuend** number while recording the jumps and new results.
Add the jumps together to find the difference.

Example 1: Subtract 324 – 134

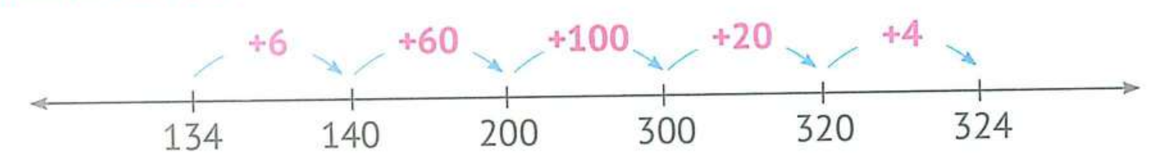
Answer:



100 + 6 + 60 + 24 = 190.

So, 324 – 134 = 190

Another answer:



6 + 60 + 100 + 20 + 4 = 190.

So, 324 – 134 = 190

Note

- The solution can be solved in more than one way by **increasing** or **decreasing** the number of hops.

Example 2: Subtract 43,456 – 23,258

Answer:

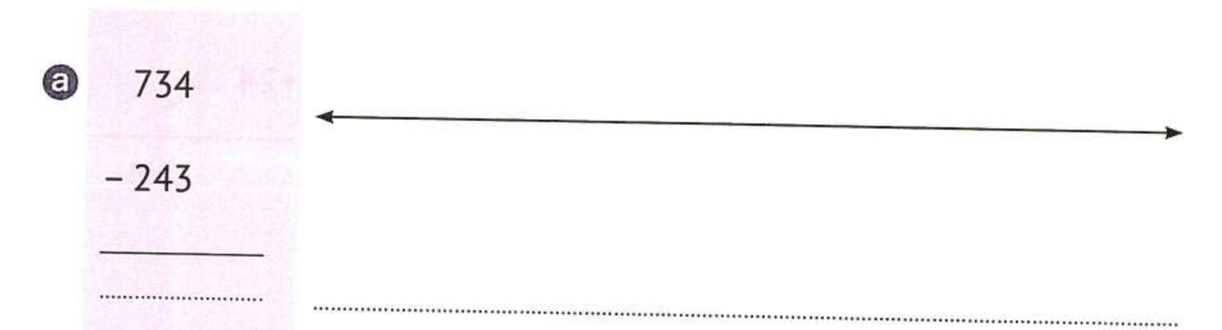
+42 +6,700 +13,000 +400 +56

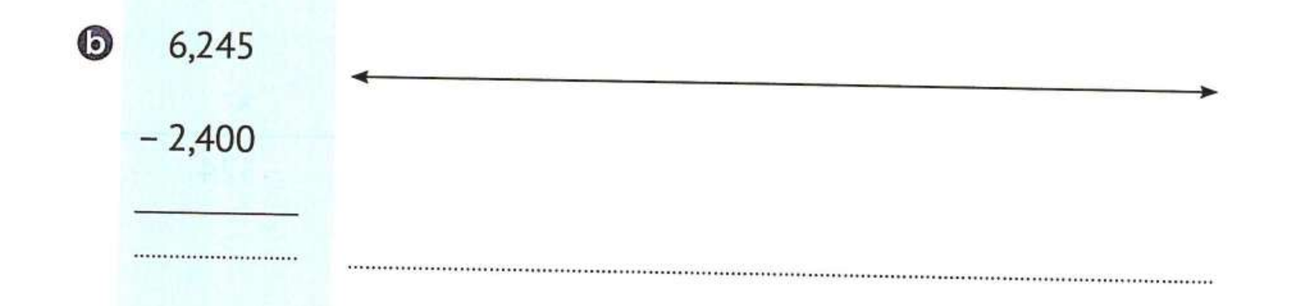
23,258 23,300 30,000 43,000 43,400 43,456

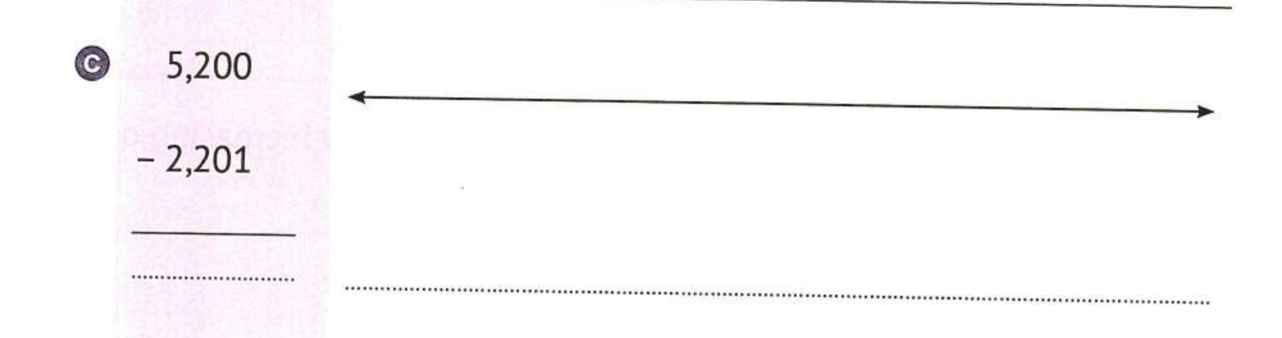
42 + 6,700 + 13,000 + 400 + 56 = 20,198.

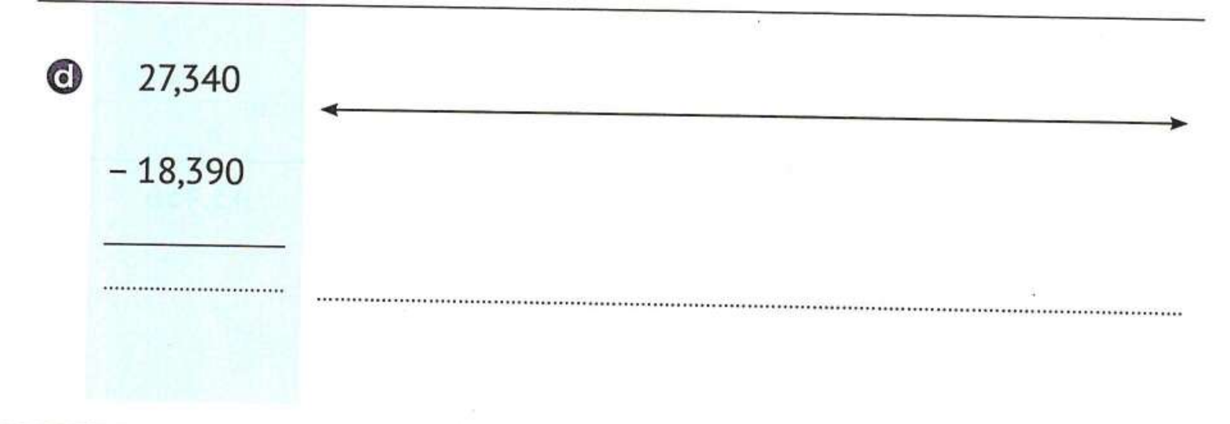
So, 43,456 – 23,258 = 20,198

1 Find the result of each of the following using the **Count Down Strategy**:









2 Solve the following problems using the Count-on Strategy:

a
588
− 326

b
8,425
− 4,362

c
5,200
− 2,301

d
16,452
− 8,250

Subtraction With Regrouping

Standard Subtraction Algorithm

- To illustrate the **Standard Subtraction Algorithm**, we use the given **Place Value** table.

Answer:

First Step

We use the the **Place Value** table to represent the **minuend** only:

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
	6	5	8	4	5

Second Step

We delete the subtrahend starting from the **Ones** place:

(And if what's inside the box **isn't enough**, we regroup by borrowing from the **next box**):

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones
	6	5	8	4	5

So, 65,845 - 37,428 = 28,417

– And the solution can be solved without the use of the Place Value table, using **Subtraction with Renaming horizontally or vertically.**

```
  ⑤ ⑮    ③ ⑮
  6̸ 5̸ , 8 4̸ 5̸
-  3 7 , 4 2 8
---------------
   2 8 , 4 1 7
```

```
⑤ ⑮    ③ ⑮
6̸ 5̸ , 8 4̸ 5̸  -  3 7 , 4 2 8  =  2 8 , 4 1 7
```

1 Use the Place Value table to find the difference:

ⓐ 6,254 – 4,823 = ...

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

ⓑ 24,456 – 11,269 = ...

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

2 Subtract using one of the subtraction strategies, then round each number to the nearest 1,000 (Show your steps):

a

8,200
− 6,058
....

Rounding

....
− ....
....

b

70,234
− 41,812
....

Rounding

....
− ....
....

3 – It takes 15,422,140 ants to carry an adult of 77 kg and about 6,350,300 ants to carry a 10-year-old child on average 32 kg. How many ants are needed to carry an adult minus a 10-year-old child?

....

....

– Round each number to the nearest million, then re-solve the question.

....

....

4 An ant colony contains 255,000 ants, and another colony contains 6,200 ants. What is the difference between the number of ants in the two colonies?

....

....

5 An ant wanted to cross a river that was 3,548 cm wide. The ant had already swam 1,672 cm.
What is the remaining distance that the ant should swim?

....

....

6 Two colonies of ants, the first colony had about 1,267 ants and the second colony had 3,452 ants.
How many more ants are there in the second colony than in the first colony?

....

....

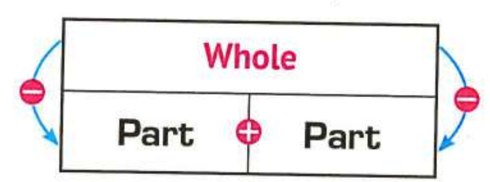
Concept 2.2 Solving Multistep Problems

Lesson 6

Bar Models, Variables and Story Problems

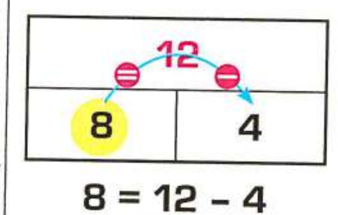
Bar Model: (Part-Part-Whole)

- It is a diagram to represent the relationship between the **whole** and the **part**:



Example:

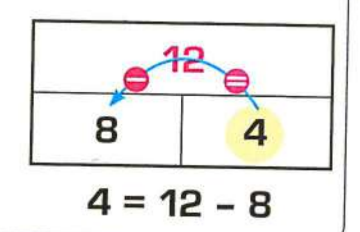
From the following bar model, we conclude that:



$8 = 12 - 4$

12	
8 ⊕	4

$12 = 8 + 4$



$4 = 12 - 8$

The equation:

- It is a **mathematical formula** in which we symbolize the **unknown number** with **one of the letters** (such as: x, y, a, ... etc).
- It is called a **variable** because its value is not fixed and changes from one question to another.

Ex. $4 + X = 9$ then: $X = 9 - 4$ → $X = 5$.

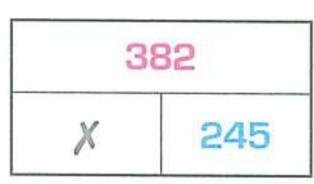
$X + 2 = 10$ then: $X = 10 - 2$ → $X = 8$.

Solve the equation = find the value of the variable.

Find the missing number: 245 + ... = 382

(Create a Bar Model and an Equation)

Bar Model:



Equation: X = 382 − 245

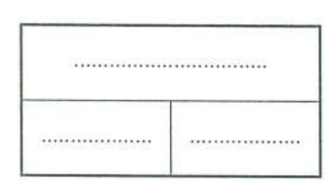
So, X = 137

Solution: 137

1 **Read the following questions. Create a Bar Model and Equation for each problem and then find the solution.**

(a) Ahmed had 8,500 pounds, from which he bought a television set for 6,250 pounds. How much money is left with Ahmed?

Bar Model:

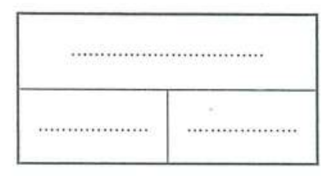


Equation: ....

Solution: ....

(b) A primary school has 2,050 students. 985 of them are girls. How many boys are in this school?

Bar Model:

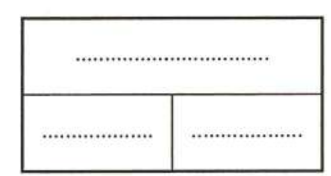


Equation: ....

Solution: ....

c) A poultry farm with **4,200** chickens. **3,350** chickens were sold in a week. How many chickens are left on the farm?

Bar Model:

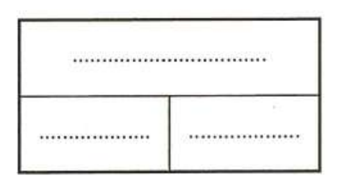


Equation: ....

Solution: ....

d) Ahmed bought a car for **90,950** pounds and bought a house for his family for **750,500** pounds. How much money did Ahmed spend to buy the car and the house?

Bar Model:



Equation: ....

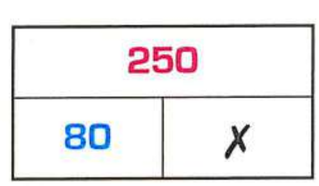
Solution: ....

Example:

Create a Bar Model to solve the following equation:

$250 - X = 80$

Bar Model:



Solution: $X = 250 - 80$

$X = 170.$

2 Create a Bar Model to solve the following equations:

ⓐ 7,120 − X = 5,200

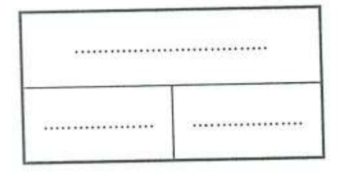
Bar Model:

Solution: ....

....

ⓑ Y − 22,120 = 18,850

Bar Model:

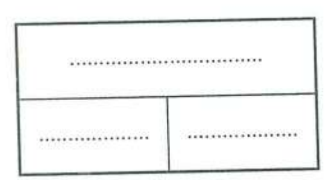


Solution: ....

....

ⓒ 812 + Z = 6,000

Bar Model:

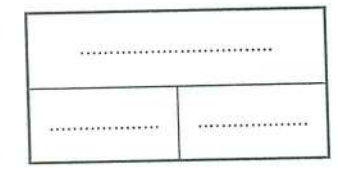


Solution: ....

....

ⓒ W + 4,455 = 7,600

Bar Model:



Solution: ....

....

Lesson 7

Solving Multistep Story Problems with Addition and Subtraction

Steps for solving word problems:

1. Circle the important numbers and data.
2. Underline the questions.
3. Draw a square around the solution keys.
4. **Check the information:**
   - What is known?
   - What is unknown?
   - What is the hidden question?
5. Use the knowns to answer the hidden question.
6. Use the new information to solve the problem and find the unknown.

Example:

Alaa went to a clothing store and bought a shirt for 260 pounds and pants for 430 pounds and shoes for 330 pounds. If Alaa had 1,300 pounds, how much money is left with him?

Answer:

Alaa paid = 260 + 430 + 330

= 1,020 pounds.

The amount left with him

= 1,300 - 1,020

= 280 pounds.

The information :
- Purchases:
  - T-shirt for 260 LE.
  - Pants for 430 LE.
  - Shoes for 330 LE.
- Alaa had an amount of 1,300 LE.
- Unknown: The remaining amount with Alaa.
- Hidden question: What is the total money of what Alaa paid?

  or

  What is the value of the purchases that Alaa bought altogether?

1 The length of the Nile River is about 6,853 km. Karim and his family travel across the Nile from a side to the other side. If they traveled 1,075 km in January, then 1,120 kilometers in February, and then 1,325 kilometers in March. How many kilometers are left to travel to get to the other side?

Answer:

....

....

....

2 The Great Pyramid had 59,000 visitors on Monday, 27,525 on Tuesday, and 32,975 on Wednesday. The number of visitors is expected to be 150,000 from Monday to Thursday. How many visitors have to attend on Thursday to reach that number?

Answer:

....

....

....

3 Mansoura has a population of 420,195 people. The population of Helwan is 320,000 people and the population of New Cairo is 200,000. How much more is the population of Helwan and New Cairo combined than the population of Mansoura?

Answer:

....

....

....

Unit 3
Concepts of Measurement

Lesson 1

Ant Travel (Units of Length)

Learning Objectives:

By the end of this lesson, the student will be able to:

- Explain the relationship between the metric units of length.
- Convert from one unit to another in metric units for measuring lengths.

Lesson 2

The Weight Can Wait (Measuring Mass)

Learning Objectives:

By the end of this lesson, the student will be able to:

- Explain the relationship between metric units of mass.
- Convert between metric units of mass.

Lesson 3

Fill It Up (Volume/Capacity)

Learning Objectives:

By the end of this lesson, the student will be able to:

- Explain the relationship between metric units of capacity.
- Convert between metric units of capacity.

Lesson 4

Measurement and Unit Conversions

Learning Objectives:

By the end of this lesson, the student will be able to:

- Know the relationships between place values and measurement transformations.
- Use multiplication and division to convert between units of measurement.

Lesson 5

What Time Is It?

Learning Objectives:

By the end of this lesson, the student will be able to:

- Read the time in minutes.
- Explain the relationships between units of time measurement.

Lesson 6

How Long Does It Take?

Learning Objectives:

By the end of this lesson, the student will be able to:

- Explain the meaning of elapsed time.
- Solve elapsed time calculation problems.
- Explain the strategies they use to solve elapsed time problems.

Lesson 7

Scaled Measurement

Learning Objectives:

By the end of this lesson, the student will be able to:

- Draw a line plot graph to represent the given data.
- Select an appropriate key and scale for the line plot graph.
- Write questions that can be answered using their line plot graph.

Lessons 8&9

Measuring the World

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use addition and subtraction to solve problems.
- Use multiplication and division to solve problems.
- Solve word problems related to measurement.
- Apply a variety of strategies to solve word problems.

Concept 3.1 Metric Measurement

Lesson 1

Ant Travel (Units of Length)

Measurement systems

There are many **measurement systems** that are used in **different parts of the world**.

Main Quantities	Units of Measurement		
	French System (Gaussian System) (C. G. S.)	**British System (F. P. S.)**	**The Metric System (M. K. S.)**
Length	Centimeter	Foot	Meter
Mass	Gram	Pound	Kilogram
Time	Second	Second	Second

In Egypt, we use the Metric System (Meter, Kilogram, Second) in measurement.

Metric System of Measurement:

(Meter, Kilogram, Second)

This system depends on the following units as a basis for measurement:

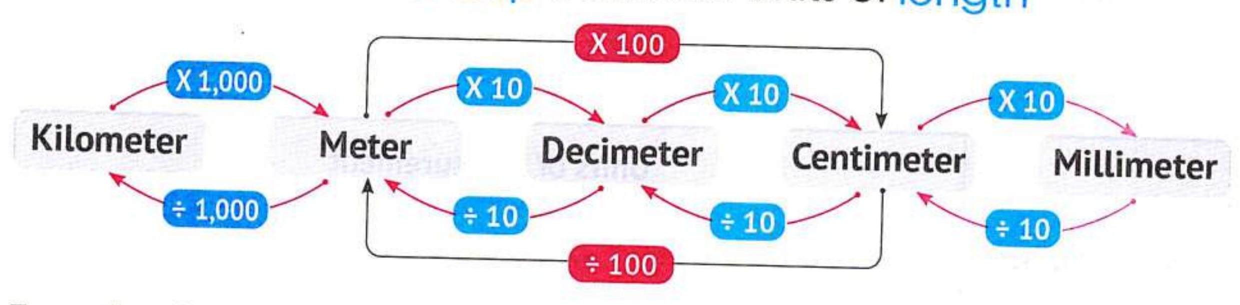
- The **meter** is to measure **length**, the **kilogram** is to measure **weight**, the **second** is to measure **time**, and the **liter** is to measure **capacity**.

- **The following table shows the metric units:**

Main Quantities	1,000 Units	100 Units	10 Units	Unit	$\frac{1}{10}$ Unit	$\frac{1}{100}$ Unit	$\frac{1}{1,000}$ Unit
Length	Kilometer	Hectometer	Dekameter	**Meter**	Decimeter	Centimeter	Millimeter
Mass	Kilogram	Hectogram	Dekagram	**Gram**	Decigram	Centigram	Milligram
Time	Kiloliter	Hectoliter	Dekaliter	**Liter**	Deciliter	Centiliter	Milliliter

Length Units

The relationship between units of length



From the above we find that:

1 **Kilometer** = 1,000 **Meters.**

1 **meter** = 10 **decimeters** • 1 **meter** = 100 **centimeters** • 1 **meter** = 1,000 **millimeters**

1 **decimeter** = 10 **centimeters** • 1 **decimeter** = 100 **millimeters**

1 **centimeter** = 10 **millimeters**

1 **Choose the best unit for measuring each of the following:**

ⓐ **Child's height.** (kilometer, meter, centimeter, millimeter)

ⓑ The **distance** between **your house and the club.**

(kilometer, meter, centimeter, millimeter)

ⓒ The **length** of an **insect.** (kilometer, meter, centimeter, millimeter)

(d) The distance between Cairo and Alexandria.

(kilometer, meter, centimeter, millimeter)

(e) The height of a school. (kilometer, meter, centimeter, millimeter)

2 Complete each of the following:

(a)

Kilometer	Meter
5	....
....	6 000
20	....
....	35 000

(b)

Meter	Centimeter
....	200
9	....
....	3 000
400	....

(c)

Meter	Decimeter
....	90
5	....
....	700
60	....

3 Complete the Bar Models to convert lengths units, as in the example:

125 cm	
1 m	25 cm

2,360 cm	
23 m	60 cm

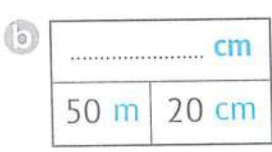
6,820 m	
6 km	820 m

20,290 m	
20 km	290 m

(a)

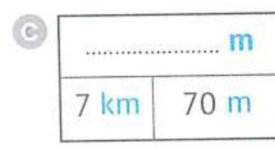
.... cm	
8 m	40 cm

(b)



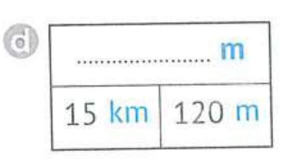
.... cm	
50 m	20 cm

(c)



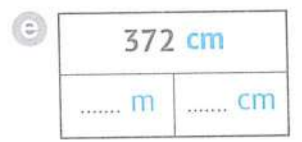
.... m	
7 km	70 m

(d)



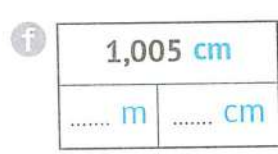
.... m	
15 km	120 m

(e)



372 cm	
...... m	...... cm

(f)



1,005 cm	
...... m	...... cm

(g)

9,300 m	
...... km	...... m

(h)

70,020 m	
...... km	...... m

4 Complete each of the following:

(a) 6 m + 25 cm = ... cm.

(b) 90 m + 32 cm = ... cm.

(c) 4 km + 138 m = ... m.

(d) 14 km + 225 m = ... m.

(e) 425 cm = ... m + ... cm.

(f) 2,003 cm = ... m + ... cm.

(g) 7,529 m = ... km + ... m.

(h) 90,050 cm = ... m + ... cm.

5 **If the length of one bee is about 1 cm, how long is a row of 100,000 bees?**

Row length = ... cm = ... m = ... km.

6 **Ahmed is 150 cm tall. How tall is Ahmed in decimeters and millimeters?**

150 cm = ... dm = ... mm.

7 **Sameh practices walking. Usually, he walks 50 meters per minute.**

– How many minutes does Sameh need to walk 500 meters?

....

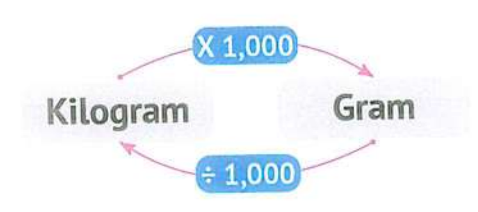
– What is the distance that Sameh walks in half an hour?

....

The Weight Can Wait (Measuring Mass)

Mass Units

The relationship between the units of mass.



1 Kilogram = 1,000 Grams

1 Choose the best mass unit for each of the following:

a. The mass of a child. (Kilograms, grams)

b. The mass of a ring. (Kilograms, grams)

c. The mass of a pencil. (Kilograms, grams)

d. The mass of a dog. (Kilograms, grams)

2 Complete each of the following:

a.

Gram	Kilogram
2,000	....
....	15
61,000	....

b.

Gram	Kilogram
....	9
5,000	....
....	12

3 Complete the Bar Models to convert between mass units:

60,030 grams	
60 kg	30 gm

8,235 gm	
8 kg	235 gm

a

.... gm	
9 kg	105 gm

b

.... grams	
32 kg	8 gm

c

8,235 gm	
.... kg	.... gm

d

41,623 grams	
.... kg	.... gm

4 Complete each of the following:

a) 6 **kilograms** = ... **grams.**

b) 200 **kilograms** = ... **grams.**

c) 90,000 **grams** = ... **kilograms.**

d) 200,000 **grams** = ... **kilograms.**

e) 3,624 **gm** = ... **kg** + ... **gm.**

f) 67,026 **gm** = ... **kg** + ... **gm.**

g) 5 **kg** + 583 **gm** = ... **gm.** h) 50 **kg** + 9 **gm** = ... **gm**

5 If Shaima's weight is 45 kilograms and 200 grams, rewrite the weight in grams.

....

....

6 Adam bought 5 kilograms and 500 grams of oranges. Then, he bought 7 kilograms of oranges. Rewrite these weights in grams, then find the total weight of what Adam bought.

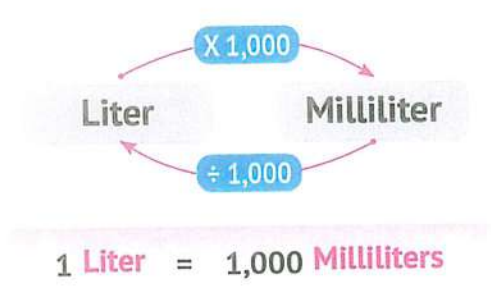
....

....

Fill It Up (Volume/Capacity)

Capacity Units

The relationship between the units of Capacity.



1 Liter = 1,000 Milliliters

1 Complete the following:

ⓐ

Liter	Milliliter
50	....
....	200,000
520,000	....

ⓑ

Milliliter	Liter
....	8
7,000	....
....	18

2 Complete the Bar Models to convert the following volume units, as in the example:

20,008 milliliter	
20 l	8 ml

Ex.

7,302 milliliter	
7 l	302 ml

ⓐ

.... ml	
35 l	20 ml

ⓑ

.... ml	
9 l	252 ml

ⓒ

3,022 ml	
.... l	.... ml

ⓓ

200,200 ml	
.... l	.... ml

3 **Complete each of the following:**

ⓐ 3 **liters** = ... **milliliters.**

ⓑ 50 **liters** = ... **milliliters.**

ⓒ 700,000 **milliliters** = ... **liters.**

ⓓ 15,000 **milliliters** = ... **liters.**

ⓔ 7,320 **milliliters** = ... **liters** + ... **milliliters.**

ⓕ 20,008 **milliliters** = ... **liters** + ... **milliliters.**

ⓖ 11 **liters** + 11 **milliliters** = ... **milliliters.**

ⓗ 10 **liters** + 2 **milliliters**= .... **milliliters.**

4 **The car's fuel tank is filled with 45 liters of gasoline. If the tank contains 30 liters and 250 milliliters.**

– How much gasoline do we need to fill the tank?

45 liters = ... milliliters.

30 liters, 250 milliliters = ... milliliters.

– Amount of gasoline = ...

5 **Islam has 2 liters, 500 milliliters of orange juice and one liter, 250 milliliters of apple juice. What is the total amount of juice that Islam has?**

2 liters, 500 milliliters = ... milliliters.

1 liter, 250 milliliters = ... milliliters.

– Amount of juice = ...

6 **A bottle contains two liters of soda water. Adel drank 320 milliliters of it and Samah drank 250 milliliters. How much sode water is left in the bottle?**

– Use the following **Bar Model** to solve:

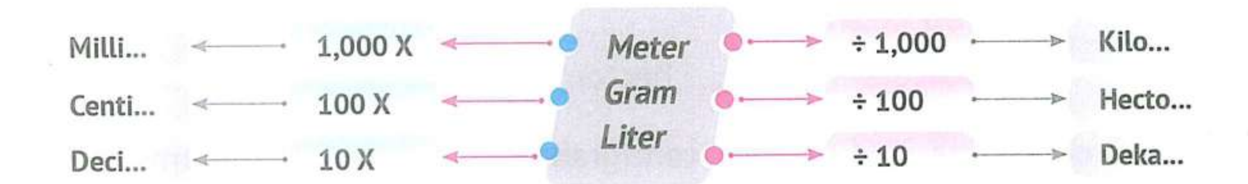
2 Liters		
230 ml	250 ml	.... ml

2 liters = ... milliliter.

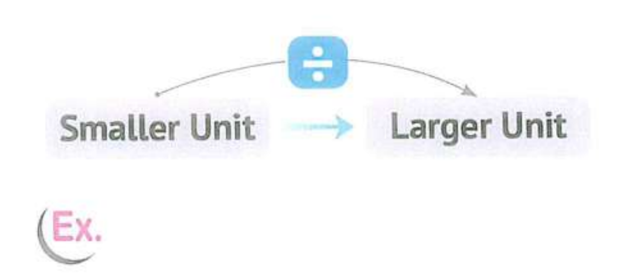
– Amount of soda water = ...

Measurement and Unit Conversions

The relationship between the units of measurement



When converting from one unit to another, do the following:



200 cm = 200 ÷ 100 = 2 m.

4,000 gm = 4,000 ÷ 1,000 = 4 kg.

1,500 l = 1,500 ÷ 100 = 15 hectoliter.

×

Larger Unit → Smaller Unit

Ex.

5 l = 5 X 1,000 = 5,000 ml.

20 m = 20 X 10 = 200 dm.

200 dekagram = 5 X 10 = 2,000 gm.

1 Complete the following:

ⓐ 3 m = ... X .... = ... cm.

ⓑ 120 m = ... ÷ .... = ...dekameter.

ⓒ 50 decigrams = ... = ... centigrams.

ⓓ 1,200 decigrams = ... = ... grams.

ⓔ 2,000 ml = ... = ... deciliter.

ⓕ 42 hectoliters = ... = ... liters.

2 Complete the following:

ⓐ 2,000 cm = ... decimeters = ... meters.

ⓑ 4,000 gm = ... dekagrams = ... hectograms.

ⓒ 25 kiloliters = ... hectoliters = ... dekaliters.

ⓓ 7,000 dekameters = ... hectometers = ... kilometers.

ⓔ 12 decigrams = ... centigrams = ... milligrams.

ⓕ 5,000 deciliters = ... liters = ... dekaliters.

3 The distance between Ahmed's house and school is 400 meters. What is the distance that Ahmed travels to reach school in centimeters?

....

....

4 The person needs 4,000 ml of water per day. How many liters does a person need per day?

....

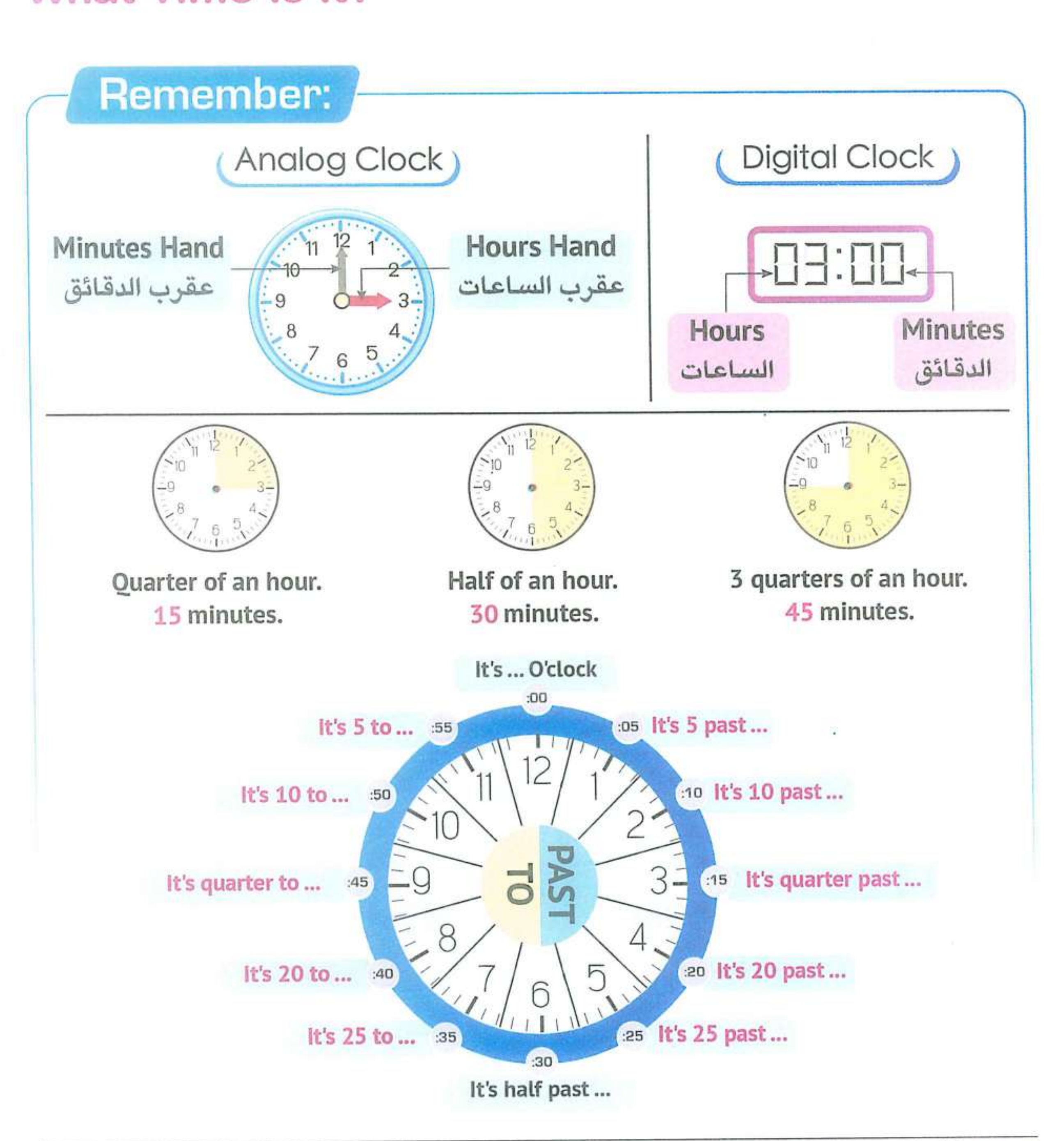
....

Concept 3.2 Evaluate Time and Scaled Measurement

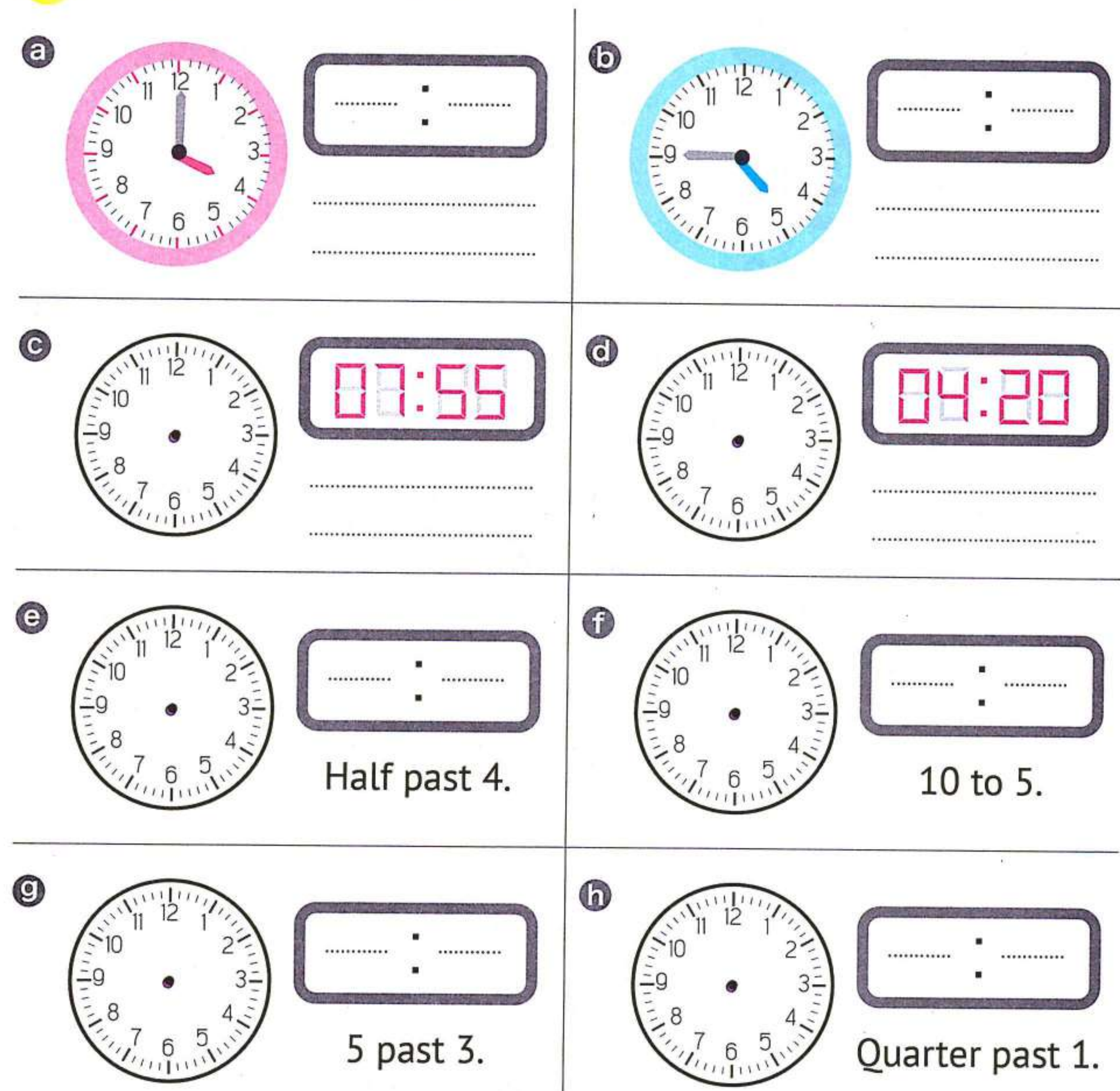
Lesson 5

What Time Is It?

Remember:



1 Complete the following:



Time Units

Week —(X 7)→ Day —(X 24)→ Hour —(X 60)→ Minute —(X 60)→ Second

Second —(÷ 60)→ Minute —(÷ 60)→ Hour —(÷ 24)→ Day —(÷ 7)→ Week

2 Complete the following tables:

ⓐ ×7

Week	Day
1	....
3	....
5	....
7	....
9	....

ⓑ ×24

Day	Hour
1	....
4	....
6	....
8	....
10	....

ⓒ ×60

Hour	Minute
1	....
2	....
5	....
8	....
10	....

ⓓ ×60

Minute	Second
1	....
3	....
6	....
7	....
9	....

3 Solve the following conversion problems:

Ex. 3 **weeks** and 5 **days** = 21 days + 5 days = 26 **days**.

ⓐ 2 **weeks** and 2 **days** = ... + ... = ... **days**.

ⓑ 7 **days** and 10 **hours** = ... + ... = ... **hours**.

ⓒ 3 **days** and 15 **hours** = ... + ... = ... **hours**.

ⓓ 2 **hours** and 10 **minutes** = ... + ... = ... **minutes**.

ⓔ 5 **hours** and 35 **minutes** = ... + ... = ... **minutes**.

ⓕ 10 **minutes** and 50 **seconds** = ... + ... = ... **seconds**.

ⓖ 5 **minutes** and 5 **seconds** = ... + ... = ... **seconds**.

4 Complete the following:

ⓐ 20 **days** = ... **weeks** + ... **days**.

ⓑ 45 **days** = ... **weeks** + ... **days**.

ⓒ 50 **hours** = ... **days** + ... **hours**.

ⓓ 130 **hours** = ... **days** + ... **hours.**

ⓔ 150 **minutes** = ... **hours** + ... **minutes.**

ⓕ 330 **minutes** = ... **hours** + ... **minutes.**

ⓖ 90 **seconds** = ... **minutes** + ... **seconds.**

ⓗ 605 **seconds** = ... **minutes** + ... **seconds.**

5 **Emad traveled with his family on a trip to Luxor and Aswan.**
He spent 3 days in Luxor and 4 days in Aswan.
How many hours did Emad spend on this trip?

....

....

....

6 **Salah swam in training for 3 hours on Thursday, 2 hours on Friday and 4 hours on Saturday.**
How many minutes did Salah spend in Swimming training in the three days?

....

....

....

How Long Does It Take?

Adding and Subtracting Time:

To add and subtract time. Look at the following examples:

Example (1):

To add 4 hours and 25 minutes + 3 hours and 55 minutes.

We add : Minutes + Minutes

Hours + Hours

- In this example, when adding the minutes, we get 25+55=80 minutes. This is not acceptable because the largest number that can be written in the minutes field is 59 minutes. As 60 minutes is an hour.

1 hour = 60 minutes

	Hours		Minutes
	4	:	25
+	3	:	55
	~~7~~	:	~~80~~
	8	:	20

So, we will regroup 60 minutes and add an hour to the total hours.

4 hours and 25 minutes + 3 hours and 55 minutes = 8 hours and 20 minutes.

Or: 4 : 25 + 3 : 55 = ~~7 : 80~~ (+1) = 8 : 20

Example (2):

To subtract 9 hours and 20 minutes – 5 hours and 45 minutes.

We Subtract : Minutes – Minutes

Hours – Hours

In this example, when subtracting 20–45, we get (–25) and this is not acceptable. So, we must follow Subtraction by Renaming Strategy. We convert 1 hour from hours to 60 minutes, then the minutes become 80 minutes, then we can subtract.

1 hour = 60 minutes

	Hours		Minutes
	8		80
	~~9~~	:	~~20~~
–	5	:	45
	3	:	35

9 hours and 20 minutes - 5 hours and 45 minutes = 3 hours and 35 minutes.

Or: ~~9~~ (8) : ~~20~~ (80) (+60) – 5 : 45 = 3 : 35.

1 Find the result of each of the following:

ⓐ

	Hours		Minutes
	6	:	34
+	2	:	26

....

ⓑ

	Hours		Minutes
	4	:	35
+	3	:	35

....

ⓒ

	Hours		Minutes
	9	:	25
−	2	:	43

....

ⓓ

	Hours		Minutes
	7	:	00
−	2	:	27

....

ⓔ 7 : 32 + 2 : 18 = ...

ⓕ 9 : 12 − 2 : 45 = ...

2 Khadija practiced Speed-ball for an hour and 25 minutes.

If she started training at 8:45, when will she finish her training?

....

....

3 Mahmoud travels from Cairo to Alexandria in a time of two hours and 45 minutes in his car. If he starts his journey from Cairo at 3:30, when will he reach Alexandria?

....

....

4 Jana and Maha have 5 hours to watch three movies. The first movie is 1 hour 22 minutes long, the second movie is 2 hours 12 minutes, and the third movie is 1 hour 57 minutes.

Do the two girls have enough time to watch the three movies?

(show your steps)

....

....

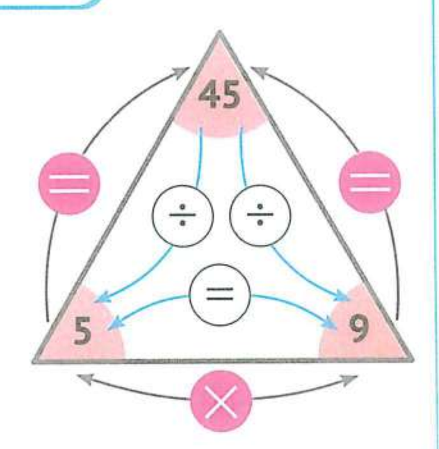
Scaled Measurement

Remember:

Triangle of Division and Multiplication Facts:

From the opposite triangle:

- 5 × 9 = 45
- 9 × 5 = 45
- 45 ÷ 9 = 5
- 45 ÷ 5 = 9

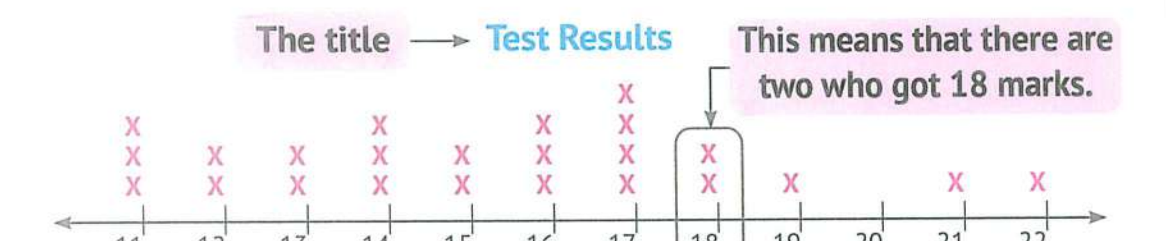


The Line Plot Graph:

The following line plot graph shows the grades of a number of students:

The title → Test Results

This means that there are two who got 18 marks.

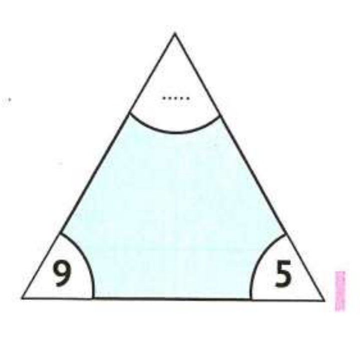


It shows us what the numbers on the line represent. → Students' Marks

X = 1 Student. ← The key

1 Complete the triangle of Division and Multiplication Facts:

ⓐ



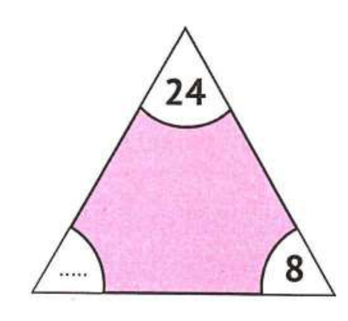
.... × .... = ...

.... × .... = ...

.... ÷ .... = ...

.... ÷ .... = ...

ⓑ



.... × .... = ...

.... × .... = ...

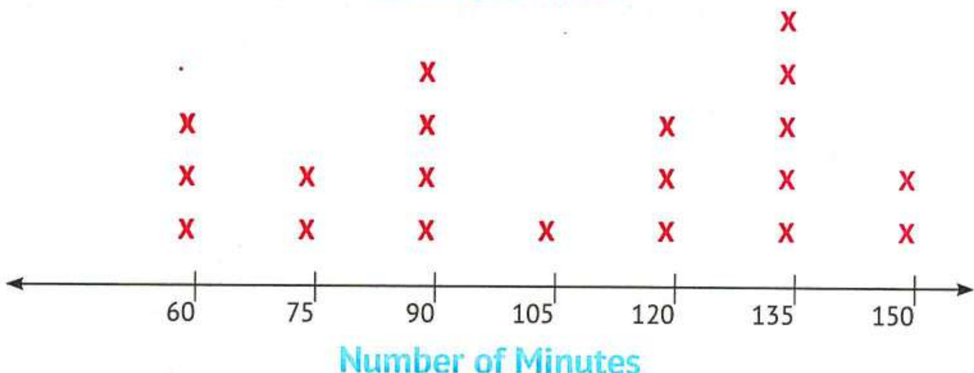
.... ÷ .... = ...

.... ÷ .... = ...

2 The following line plot graph shows the number of minutes spent by a number of students in Football training.

Use the graph to answer the questions:

Training Minutes



Number of Minutes

X = 2 Students.

ⓐ The number line scale is ....

ⓑ The minimum time students spend in training is .... minutes.

ⓒ The maximum time students spend in training is .... minutes.

ⓓ The most common time students spend in training is .... minutes.

ⓔ The least common time students spend in training is .... minutes.

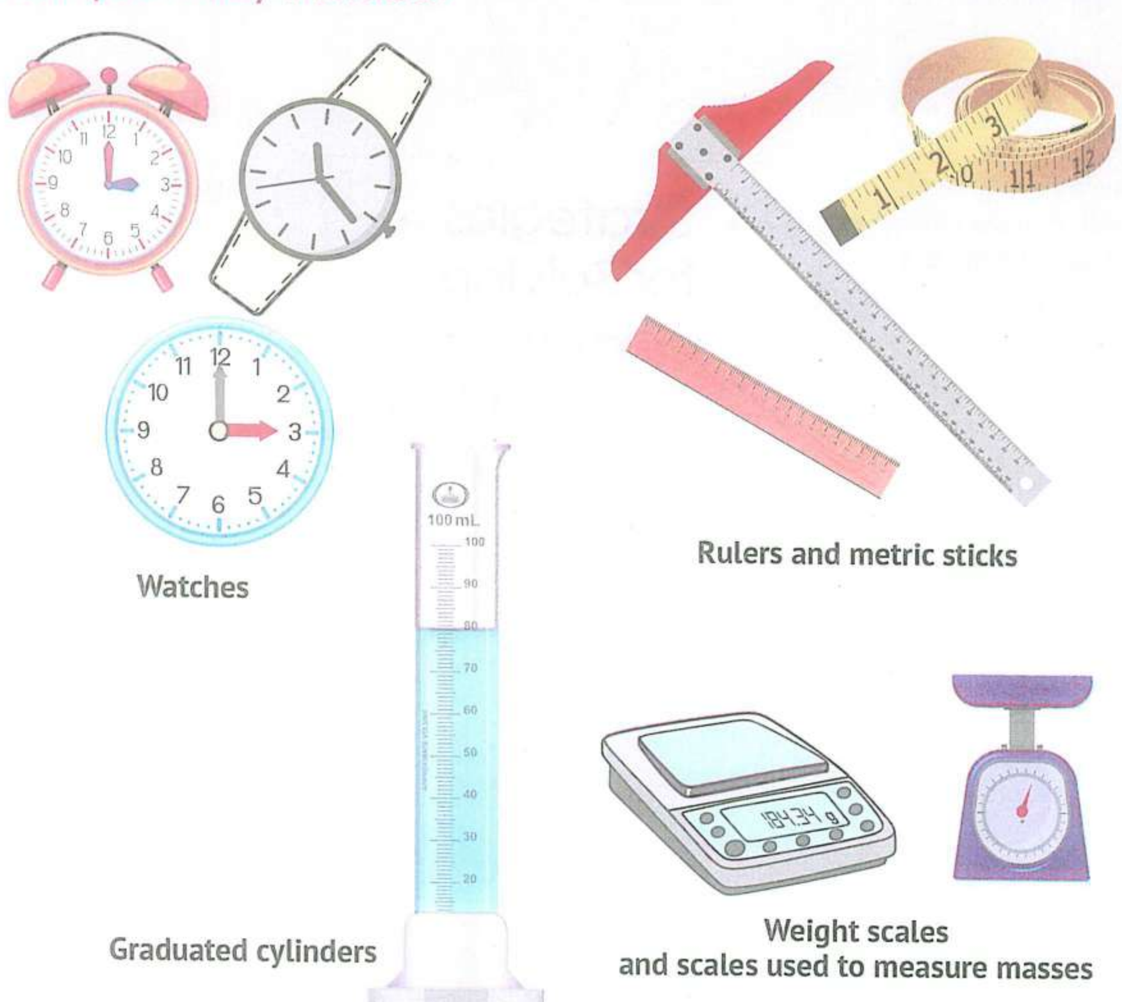
ⓕ The number of students who spend 90 minutes in training is ....

ⓖ The number of students who spend less than 105 minutes in training is ....

Gradient Scales

We see gradient scales in our daily lives and in school.

Examples may include:



Watches

Rulers and metric sticks

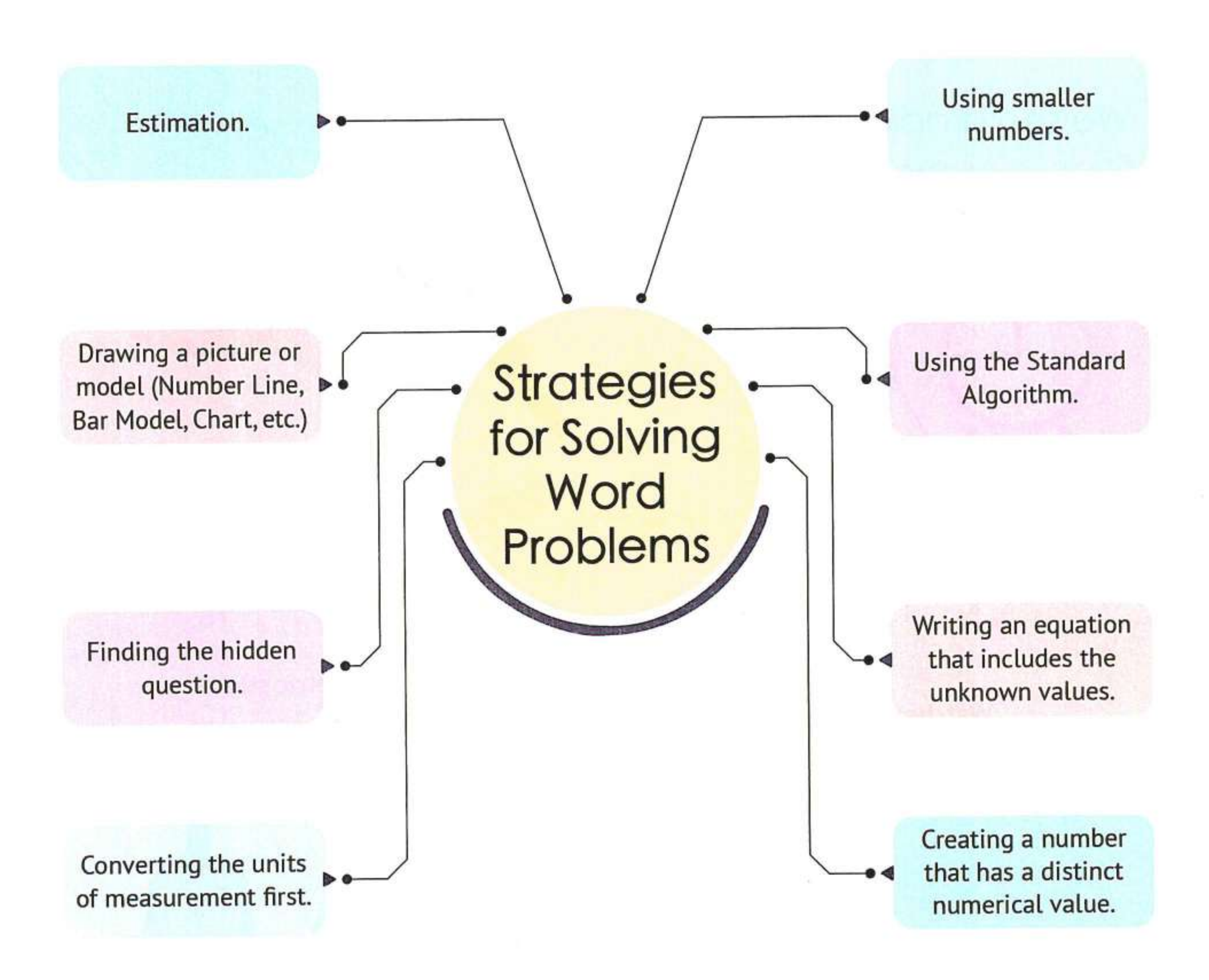
Graduated cylinders

Weight scales and scales used to measure masses

Concept 3.3 Measurement All Around

Lessons 8&9

Measuring the World Around Me



1 Aya bought potatoes weighing 2 kg and 950 g. She bought onions that weighed 1,075 grams less than the potatoes. What is the weight of the potatoes and onions together?

....

....

....

....

2 It takes 45 days for a pharaonic ant to grow from the Egg Stage to become an adult ant. It takes 12 weeks for a wood ant to grow from the Egg Stage to become an adult.
Which species takes the longest to grow from the Egg Stage to an adult ant? What is the time difference between them?

....

....

....

....

3 A fish tank has a capacity of 100 liters. 20,000 milliliters of water are poured into it.
How many liters of water should be used to fill the tank completely?

....

....

....

....

4 Zina bought 8 kilograms of sugar, 10 kilograms of flour, 500 grams of cocoa, 225 grams of nuts, and 275 grams of coconut.
What is the total mass of what Zina bought in kilograms?

....

....

....

....

....

5 Ahmed has a 12 meter long piece of wood. He wants to cut it into 3 equal pieces in length.
How long should each piece be in meters?
What is the length of each piece in centimeters?

....

....

....

....

....

6 Ayman likes jogging. During training, Ayman needs to drink 500 milliliters of water 4 times per day.
How many liters of water will he drink in one week?

....

....

....

....

7 Ehab trains Weightlifting. His weight is 100 kilograms.
Ehab wants his weight to increase by 500 gm per week.
If this continues for 5 weeks, what will his weight be in the end?

....

....

....

....

Unit 4
Area and Perimeter

Marching Ants (The Perimeter)

Learning Objectives:

By the end of this lesson, the student will be able to:

- Define the perimeter.
- Use the rectangle perimeter formula to calculate the perimeter of the rectangle.
- Explain how to calculate the perimeter.

Lesson 2

Fill the Space (The Area)

Learning Objectives:

By the end of this lesson, the student will be able to:

- Define the area.
- Use the formula to calculate the areas of rectangles.
- Explain how to calculate the area.

Lesson 3

Something Is Missing!

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use formulas to calculate unknowns when determining some dimensions of rectangles.

Lesson 4

Odd Shapes

Learning Objectives:

By the end of this lesson, the student will be able to:

- Calculate the area and perimeter of odd shapes.
- Explain the strategies for finding the area and perimeter of odd shapes.

Growing Dimensions

Learning Objectives:

By the end of this lesson, the student will be able to:

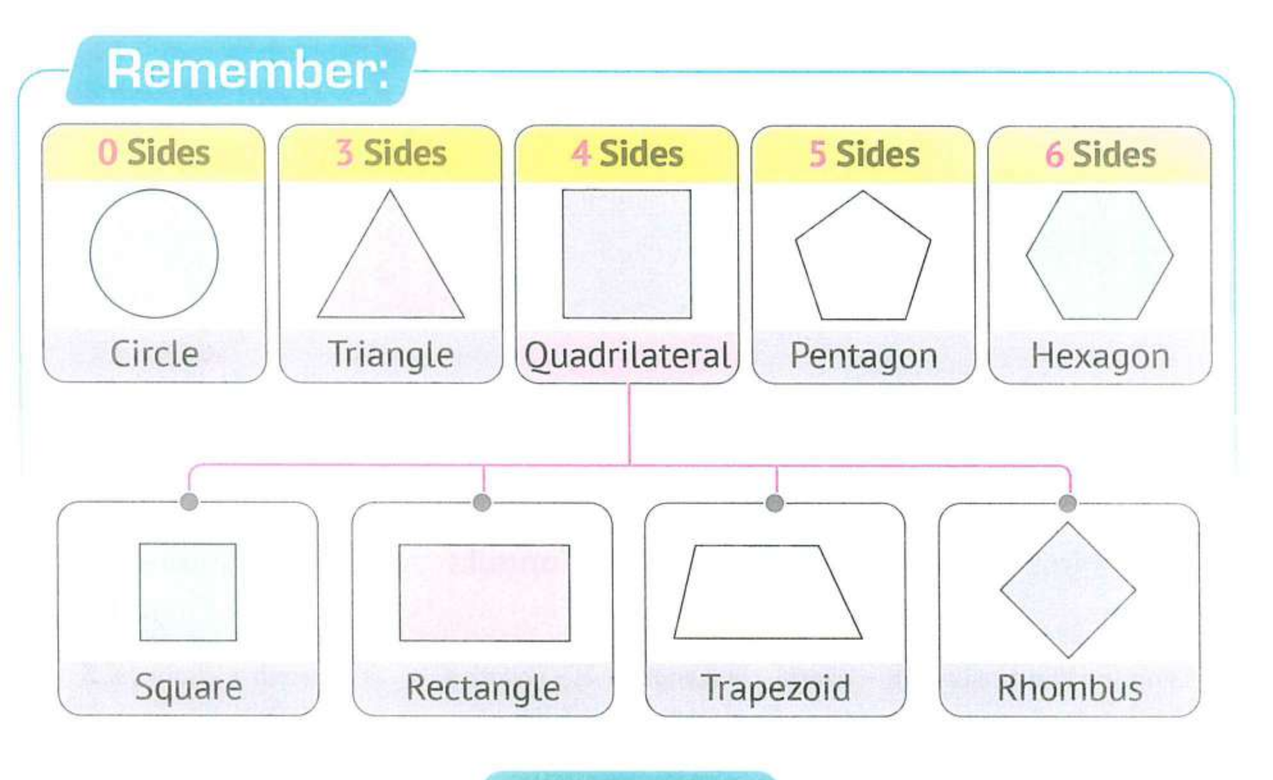
- Use the formulas of area and perimeter to solve comparison problems using multiplication.

Concept 4.1 Exploring Area and Perimeter

Lesson 1

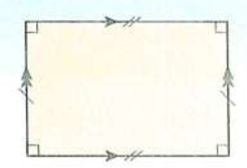
Marching Ants (The Perimeter)

Remember:



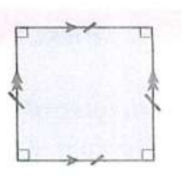
The Rectangle

- It is a quadrilateral with four sides and four angles.
- Each two opposite sides are equal and parallel.
- Each of its corners is a right angle (90 degrees).

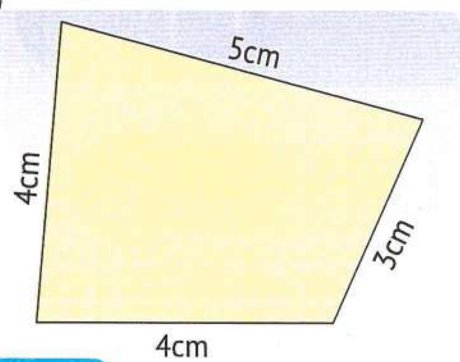


The Square

- A type of rectangles.
- Its four sides are equal.



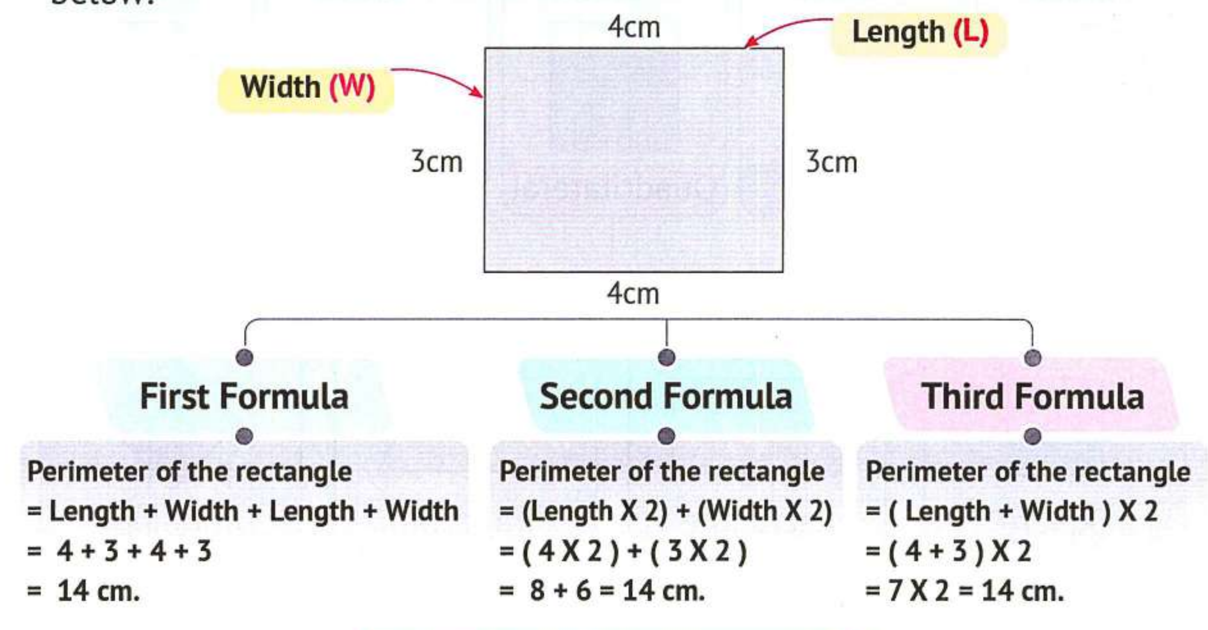
The Perimeter



- The **perimeter** of a figure is the **sum of the lengths of its sides**.
- **Example:** The perimeter of the opposite figure
  = 5 + 3 + 4 + 4 = 16 cm.

Perimeter of the Rectangle

- We can calculate the perimeter of the rectangle in one of the ways shown below:



First Formula

Perimeter of the rectangle
= Length + Width + Length + Width
= 4 + 3 + 4 + 3
= 14 cm.

Second Formula

Perimeter of the rectangle
= (Length X 2) + (Width X 2)
= (4 X 2) + (3 X 2)
= 8 + 6 = 14 cm.

Third Formula

Perimeter of the rectangle
= (Length + Width) X 2
= (4 + 3) X 2
= 7 X 2 = 14 cm.

Perimeter of the Square

- We can calculate the perimeter of the square in one of the ways shown below.

3cm
Side
Side
3cm
3cm
3cm

First Formula

Perimeter of the square
= The sum of its sides lengths
= 3 + 3 + 3 + 3 = 12 cm.

Second Formula

Perimeter of the square
= Side length (L) X 4
= 3 X 4 = 12 cm.

1 **Use two different formulas to find the perimeter for each shape (show your steps):**

ⓐ First Formula = ...

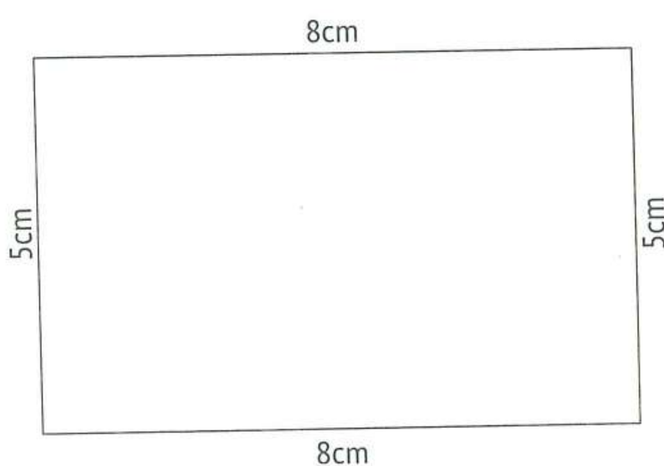
....

....

Second Formula = ...

....

....



ⓑ First Formula = ...

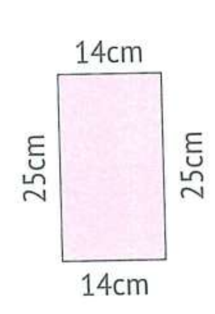
....

....

Second Formula = ...

....

....



ⓒ First Formula = ...

....

....

Second Formula = ...

....

....

25cm
25cm 25cm
25cm

2 **Solve the following perimeter problems: For each problem, draw a rectangle and write the length and width according to the problem:**

ⓐ Tarek is making a frame for his rectangular picture, 45 cm long and 25 cm wide. What is the perimeter of the frame?

....

....

....

....

....

ⓑ Omar is building a square fence around his garden. Each side is 8 meters long. What is the perimeter of the fence?

....

....

....

....

....

ⓒ Issam wants to put a wooden frame around a 2 m long and 1 m wide window. What is the perimeter of the frame?

....

....

....

....

....

3 **Maha walked in a path with a perimeter of 200 m. Draw two different rectangles that can represent her path: (Write the height and width on the drawing).**

The First Rectangle

The Second Rectangle

4 **A square whose sides are 20 cm. Find its perimeter. Then draw a rectangle with the same perimeter.**

....

....

....

....

Fill the Space (The Area)

Area

- Shape area is the surface area of **two-dimensional geometric shapes**.
  Or is the **number of square units** that make up the shape.

Example: The area of the corresponding figure:

- The units that make up the corresponding figure are **15** square units.
- **The area can be calculated in another way:**
  - We have 3 rows and each row consists of 5 units.
  - Therefore, the area (number of units)

    = 5 X 3 = 15 square units.

5 Units (across), 3 Units (down)

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15

Units of Measurement for Area:

- Any unit of length **(millimeter, centimeter, meter, kilometer)** can be used. However, we always say the word **square** or write **(the power of 2)** to represent the amount of squares for a given unit which can be plotted in a grid on the figure.
- **Square Centimeter (cm^2):** is the area of a square with side length of **(1 cm)**.

1cm. (each of the four sides)

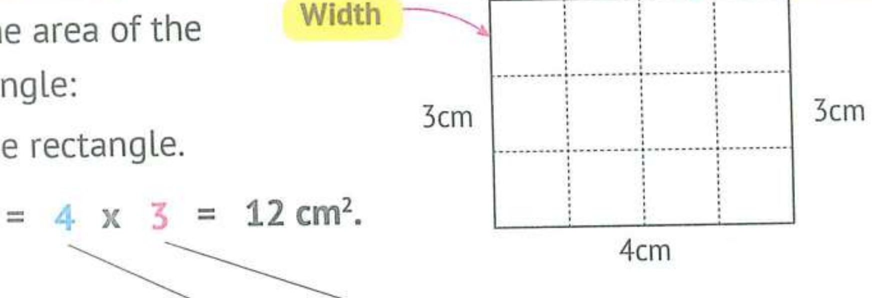
- **Square Meter (m^2):** is the area of a square with a side length of **(1 m)**.

The area of the Rectangle:

- To calculate the area of the opposite rectangle:

  The area of the rectangle.

  = 4 x 3 = 12 cm^2.



Formula:

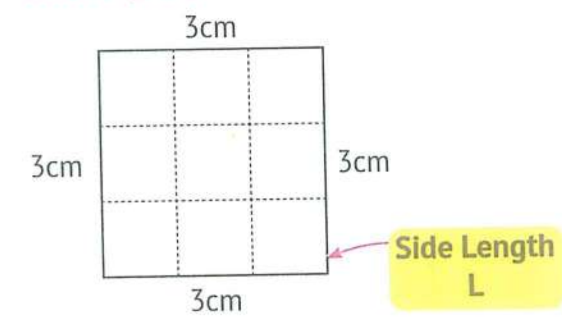
- Area of the rectangle = **Length (L)** x **Width (W)**

The area of the Square:

- To calculate the area of the opposite Square:

  Area = 3 x 3 = 9 cm^2.

  A = (L) x (L)



- Area of the square = the length of the side (L) x itself (L)

1 **Calculate the area of the following rectangles (show your steps):**

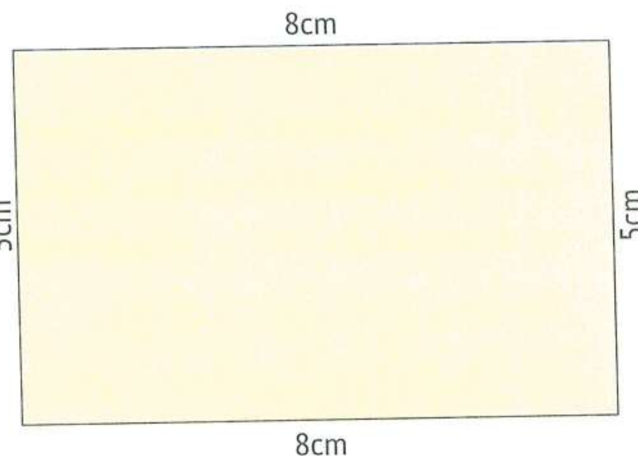
ⓐ Area = ...

....

....

....

....

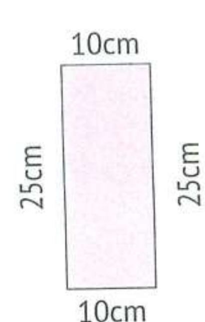


ⓑ Area = ...

....

....

....



(c) Area = ...

....

....

....

20cm

20cm   20cm

20cm

2 **A dining table is 8 m long and 6 m wide. What is the area of the glass needed to cover the top of this table?**

Area = ...

....

....

3 **A square piece of paper with a side length of 9 cm. What is the area of this piece of paper?**

Area = ...

....

....

4 **A glass window is surrounded by a wooden frame consisting of two parts joined from the two short edges. Each part is in the form of a rectangle of 6 m length and 2 m width. Find:**

The area of the glass and the perimeter of the wooden frame.

....

....

....

....

....

5 Draw two rectangles with an area of 24 cm^2, then find the perimeter of each:

Perimeter = ...
....

Perimeter = ...
....

6 Draw a rectangle of 5 cm length and 2 cm width, then find its perimeter and area.

Perimeter = ...
....

Area = ...
....

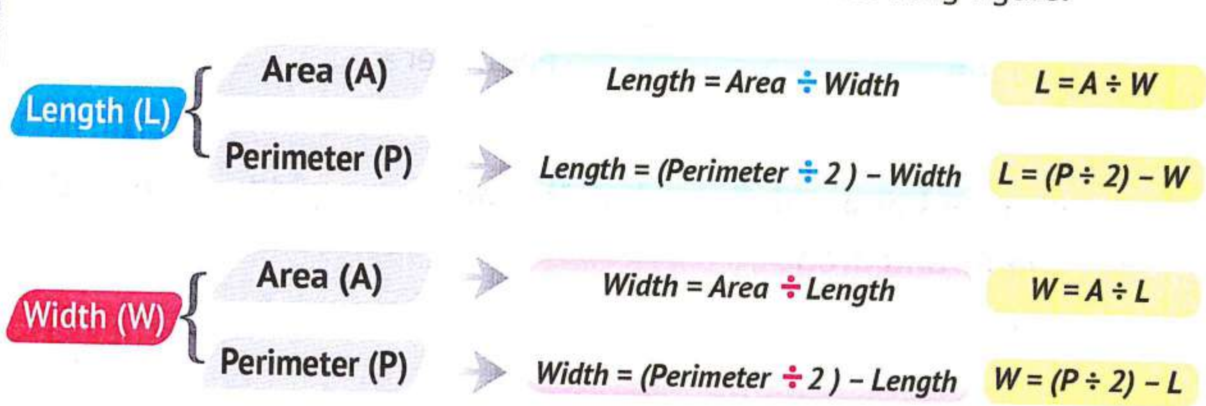
7 A rectangle with an area of 30 square meters.
What is the perimeter of this rectangle. Draw your answer with the dimensions.

Perimeter = ...
....
....
....

Something Is Missing!

Rectangle

- If we have the **perimeter or area** of a rectangle and **one** of **its dimensions**, (length or width):
- We can get the other dimension as shown in the following figure.



Ex.1: The area of a rectangle is 32 cm^2, and its length is 8 cm. Find its width and its perimeter.

Answer: $W = A \div L$

$= 32 \div 8$

$= 4$ cm.

$P = 2L + 2W$

$= 2 \times 8 + 2 \times 4$

$= 16 + 8$

$= 24$ cm.

Ex.2: The perimeter of a rectangle is 20 cm, and its width 3 cm. Find its length and its area.

Answer: $P \div 2 = 20 \div 2$

$= 10$ cm.

$L = 10 - 3$

$= 7$ cm.

$A = L \times W$

$= 7 \times 3$

$= 21$ cm^2.

Square

- If we have the **perimeter** of the square, we can get the **length** of the side by dividing the **perimeter ÷ 4**.

Side length ➤ **Perimeter** ➤ *Side length = Perimeter ÷ 4* $L = P \div 4$

- If we have the **area** of the square, then we can get the **length** of the side by looking for **two identical numbers whose product is equal to the area**.

Side length ➤ **Area** ➤ *Side length X Side length = Area* $L \times L = A$

Ex. 3: A square has a perimeter of 24 cm. Find its side length and area.

Answer: $L = P \div 4$

$= 24 \div 4$

$= 6$ cm.

$A = L \times L$

$= 6 \times 6$

$= 36$ cm^2.

Ex. 4: A square has an area of 25 cm^2. Find its side length and perimeter.

Answer: $25 = 5 \times 5$

So: side length = 5 cm.

$P = L \times 4$

$= 5 \times 4$

$= 20$ cm.

1 Complete the following table:

	Length	Width	Perimeter	Area
a	10 cm.	7 cm.	....	....
b	....	6 m.	30 m.	....
c	12 mm.	....	40 mm.	....
d	....	4 cm.	....	36 cm^2.
e	8 dm.	....	....	48 dm^2.

2 Complete the following table:

	Side Length	Perimeter	Area
a	6 cm.	....	....
b	....	28 m.	....
c	....	....	64 mm^2.

3 Find the length of the unknown sides in the opposite figure. Then find the perimeter and area of the shape.

4cm

5cm

.........cm

.........cm

5cm

10cm

....

....

....

....

....

....

4 Adam wants to make a frame for his father's picture.

The image is a rectangle with an area of 100 cm^2.

Find the length and width of the frame?

Draw the frame in two ways and show your steps.

....

....

....

....

5 Ismail needs 120 meters of wire to build a fence around his farm. If the length of one of the sides of the farm is 30 m, what is the length of the other side? (Draw a figure showing the farm)

....

....

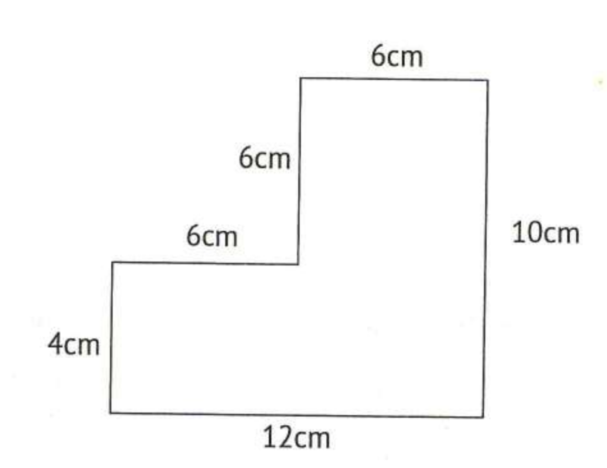
....

....

Odd Shapes

- The area and perimeter of odd shapes can be calculated in several ways, as in the example:

Calculate the area and perimeter of the opposite shape:



Divide the shape into rectangles

6cm
6cm
6cm
10cm
4cm
12cm

Perimeter = 12 + 10 + 6 + 6 + 6 + 4
= 44 cm.

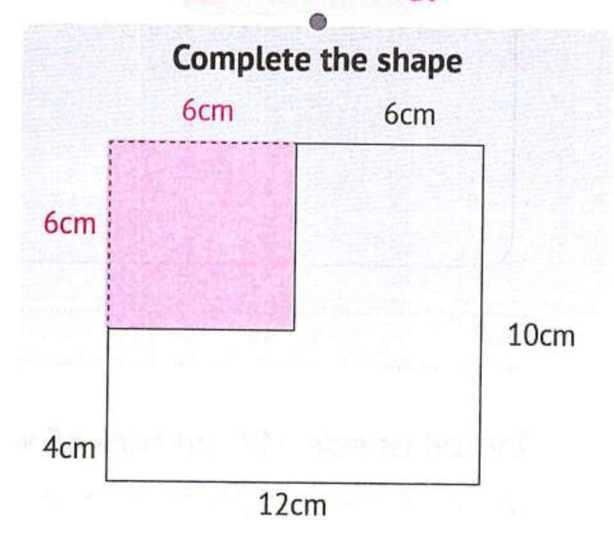
Area of rectangle (1) = 10 x 6 = 60 cm^2.

Area of rectangle (2) = 6 x 4 = 24 cm^2.

Area of the shape = 60 + 24
= 84 cm^2.

Second Strategy

Complete the shape



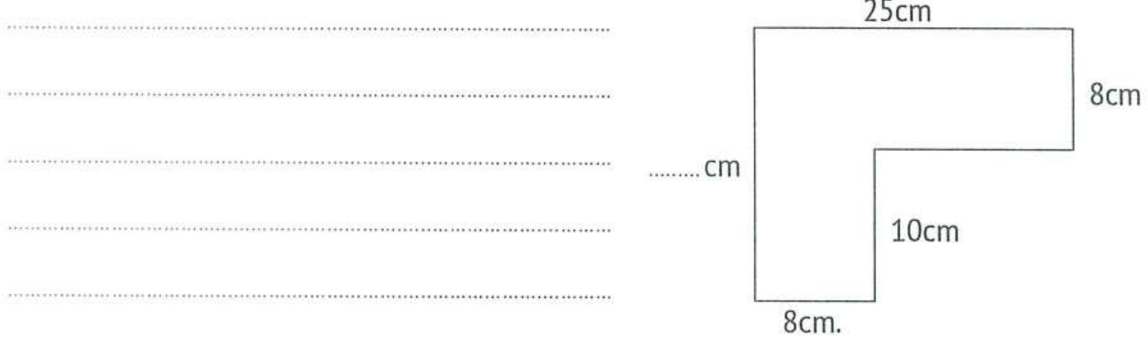
Perimeter = 12 + 10 + 6 + 6 + 6 + 4
= 44 cm.

Area of the whole rectangle = 12 x 10
= 120 cm^2.

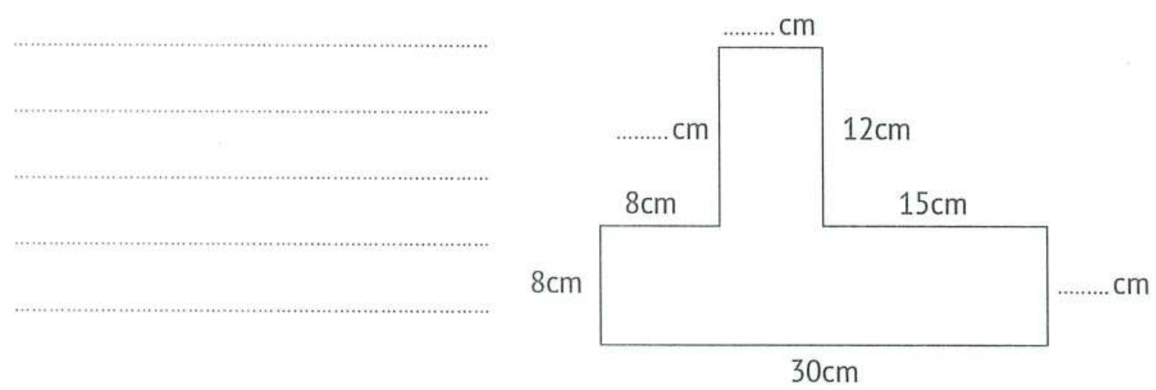
Area of the added part = 6 x 6 = 36 cm^2.

Area of the shape = 120 – 36 = 84 cm^2.

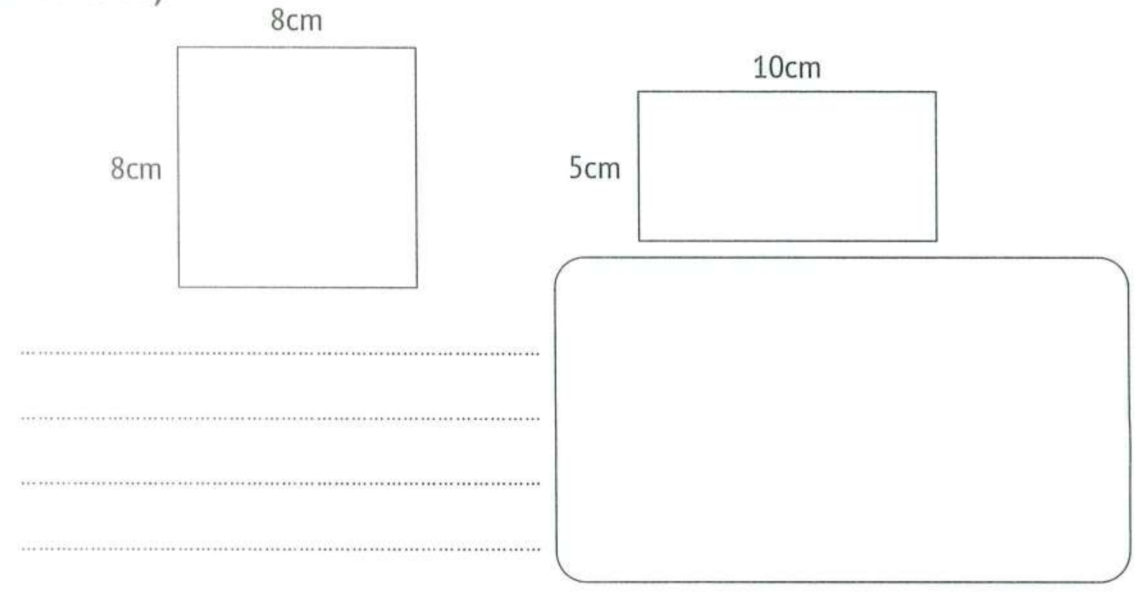
1 Calculate the perimeter and area of the following shape.



2 Calculate the perimeter and area of the following shape.



3 Combine the following two geometric shapes to form one odd shape. Calculate the area and perimeter of this shape. (Draw your geometric figure and write the measurements on the sides)



Lesson 5

Growing Dimensions

Notes

- Double the number **5** — **Means** → 5 **x** 2
- Three times the number **6** — **Means** → 6 **x** 3
- Four times the number **7** — **Means** → 7 **x** 4....., and so on.
- Half of the number **20** — **Means** → 20 ÷ 2
- Third of the number **15** — **Means** → 15 ÷ 3
- Fifth of the number **15** — **Means** → 15 ÷ 5....., and so on.

Example: **A rectangle has an area of 15 square meters, and its length is 5 meters.**

Find the width.

Then, find the area of another rectangle whose length is twice the length and width of the first rectangle

Answer:

- The width of the rectangle = 15 ÷ 5 = 3 m.
- The length of the other rectangle = 5 x 2 = 10 m.
- The width of the other rectangle = 3 x 2 = 6 m.
- The area of the rectangle = 10 x 6 = 60 square meters.

1 **Hussam owns a poultry farm, which is 10 meters long and 5 meters wide. Emad owns a poultry farm. Its length and width are three times the length and width of Hussam's farm.**

Draw a diagram showing each of the two farms, showing the measurements on the drawing. Then find the area and perimeter of each.

....

....

....

....

2 Ramy owns a piece of land in the form of a square whose sides are 40 m long. He built a house in the shape of a rectangle whose length is half the length of the land and its width is fourth the width of the land.

He left the rest of the land as a garden for the house (as in the figure). Calculate the length and width of the house and then calculate the area of the garden.

40m

40m

?

?

....

....

....

....

3 A mural of area 24 square meters and 8 meters long. What is the width of this mural?

Another mural is the same length as the first mural and three times the width as the first one.

Find the perimeter and area of the second mural.

....

....

....

....

Theme 2 Mathematical Operations and Algebraic Thinking

Unit 5 Multiplication as a Relationship

Lesson 1

Understanding Multiplicative Comparison

Learning Objectives:

By the end of this lesson, the student will be able to:

- Develop a comparison using multiplication.
- Represent comparison problems using multiplication.

Lesson 2

Creating Multiplicative Comparison Equations

Learning Objectives:

By the end of this lesson, the student will be able to:

- Create equations to represent comparison problems using multiplication.
- Use symbols in equations to represent unknown values.

Lesson 3

Solving Multiplicative Comparison Equations

Learning Objectives:

By the end of this lesson, the student will be able to:

- Create equations for comparisons using multiplication and solve these equations.

Lesson 4

Commutative Property of Multiplication

Learning Objectives:

By the end of this lesson, the student will be able to:

- Explain the Commutative Property of Multiplication.
- Use the Commutative Property of Multiplication to solve problems.

Lesson 5

Patterns of Multiplying by 10s

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use the property of the Neutral Element in multiplication to solve problems.
- Use the Zero Element Property in multiplication to solve problems.
- Know the patterns that are repeated when multiplying by 10, 100, 1,000.

Lesson 6

Exploring Patterns in Multiplication

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use place value concepts of multiplication in multiples of 10, 100, 1,000.
- Explain the patterns of multiplication in multiples of 10, 100 and 1,000.

Lesson 7

Exploring More Patterns in Multiplication

Learning Objectives:

By the end of this lesson, the student will be able to:

- Explain the Property of Association in the multiplication process.
- Use the Associative Property in the multiplication process to solve multiplication problems.

Lesson 8

Applying Patterns in Multiplication

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use Decomposition of a number into its factors and Associative Property of Multiplication to solve equations with multiples of 10, 100, 1,000.

Concept 5.1 Develop Multiplicative Comparisons

Lesson 1

Understanding Multiplicative Comparison

Note That

$4 \times 6 = 24$, The number 24 can be decomposed as:

24: 6 + 6 + 6 + 6

24: 4 + 4 + 4 + 4 + 4 + 4

So, 24 is 4 times 6 or 24 is 6 times 4

Ex.
ⓐ Compare 18 and 6 → 18 is **triple** (**three** times) 6
ⓑ Compare 18 and 3 → 18 is **six** times 3

1 Compare the following numbers:

ⓐ 15 and 3 → 15 .... 3.
ⓑ 15 and 5 → 15 .... 5.
ⓒ 20 and 4 → 20 .... 4.
ⓓ 21 and 7 → 21 .... 7.
ⓔ 42 and 6 → 42 .... 6.

2 Complete the following:

ⓐ 4 + 4 + 4 + 4 + 4 + 4 = ... x .... = ...
ⓑ 3 + 3 + 3 + 3 + 3 = ... x .... = ...
ⓒ 7 x 3 = ... + ... + ... = ...
ⓓ 6 x 5 = ... + ... + ... + ... + ... = ...

Strip Diagram:

6	6	6	6	6

– In the previous diagram, we find that the number **(6)** is repeated (**5** times).

6 + 6 + 6 + 6 + 6 = **30** 6 x 5 = **30**

And we can say that **30** is **5** times **6**

3 Complete each of the following using the Strip Diagrams:

ⓐ

4	4	4	4

.... is .... times **4**.

ⓑ

7	7	7	7	7	7	7

.... is .... times ....

ⓒ

2	2	2	2

.... is .... times ....

ⓓ

3	3	3	3	3	3	3	3	3

.... is .... times ....

4 Divide the Strip Diagrams according to the numerical sentence:

ⓐ 28 is **four** times **7**.

ⓑ 28 is **seven** times **4**.

ⓒ 24 is **three** times **8**.

ⓓ 30 is **three** times **10**.

Lesson 2

Creating Multiplicative Comparison Equations

Equation:

It is a mathematical formula in which numbers and symbols are used to express the equality relationship in a number sentence.
Where the unknown number is expressed by one of the letters (x, y, z, a, b, ...) and it is called "variable".

Converting a Numerical Sentence into an Equation

Ex.1: A number equals 3 times 7.

$x = 3 \times 7$

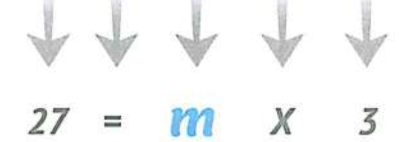
Ex.2: 24 equals 4 times a number.

$24 = 4 \times y$

Ex.3: A number equals 5 times 9.

$a = 5 \times 9$

Ex.4: 27 equals .... times 3.



$27 = m \times 3$

1 Write an equation for the following comparisons. Use a symbol to represent the unknown number:

ⓐ A number is 7 times 4: ....

ⓑ A number is 4 times 3: ....

ⓒ A number is equal to twice the number 7: ....

ⓓ 18 equals 6 times a number: ....

ⓔ 24 equals 4 times a number: ....

ⓕ 48 equals 8 times a number: ....

ⓖ 21 is equal to ..... times the number 3: ....

ⓗ 36 is equal to ..... times the number 9: ....

Ex.5: Ahmed has 15 balls. This is equal to 5 times the number of balls that his brother Adel has . Write an equation to represent this comparison.

Solution : The number of balls that Ahmed has is 5 times the number of balls that Adel has...

Equation : $15 = 5 \times X$

2 Read the word problems and think about the comparisons. Then write the multiplication equation that represents this problem:

(Use a symbol to represent the unknown number. It is **not necessary** to solve the equations):

ⓐ Nadia collected 5 glass balls in March and continued to collect balls until May. The number of balls with her now is 4 times that number. How many glass balls does she have in May?

....

....

....

....

ⓑ Hamid has 12 pieces of cake. This is equal to 3 times the number of cakes that his brother Ahmed has.
How many pieces of cake does Ahmed have?

....

....

....

....

ⓒ Aida walked to school on Monday and arrived in **21 minutes**.

On Tuesday, she rode her bike to school and arrived **7 minutes later**.

How many times was riding a bike faster than walking?

....

....

....

....

ⓓ Sarah ran around the football field **4 times**.

Aya ran around the football field **twice** as many times as Sarah.

How many times did Aya run around the football field?

....

....

....

....

ⓔ Rana has **6 mangoes**. Her brother Sherif has **18 mangoes**.

How many times is the number of mangoes with Sherif the same as the number of mangoes with Rana?

....

....

....

....

Solving Multiplicative Comparison Equations

Solve the Equation = Find the Value of the Unknown (the Variable)

Ex.: Write an equation for comparisons, use symbols to represent the unknown, then find the value of the unknown.

a A number equals 3 times 8

Equation: $x = 3 \times 8$

Solution: $x = 24$

b 28 equals 4 times a number

Equation: $28 = 4 \times y$

Solution: $y = 28 \div 4 = 7$

1 Write an equation for comparisons, use symbols to represent the unknown. Then find the value:

a A number is equal to 8 times 4. Equation : ....

Solution : ....

b A number is equal to 6 times 5. Equation : ....

Solution : ....

c A number is equal to 9 times 2. Equation : ....

Solution : ....

d 18 equals 6 times a number. Equation : ....

Solution : ....

e 36 equals 4 times a number. Equation : ....

Solution : ....

(f) 42 equals 7 times a number. Equation : ....

Solution : ....

2 Read the word problems and think about the comparisons, then write the multiplication equation that represents this problem:

(Use a symbol to represent the unknown number. Then solve the equations):

(a) Rana has 15 candy bars. This is 3 times the number of candy bars her brother Karim has. How many candy bars are there with Karim?

Equation : ....

Solution : ....

(b) Alaa ran around the football field 5 times. Aya ran around the field 3 times as many times as Alaa.

How many times did Aya run around the field?

Equation : ....

Solution : ....

(c) Saleh has 5 oranges. His brother, Adel, has 20 oranges.

How many times is the number of oranges with Adel the same as the number of oranges with Saleh?

Equation : ....

Solution : ....

(d) The height of a building is 24 meters. A tree is 3 meters high.

How many times the height of the building is the same as the height of the tree?

Equation : ....

Solution : ....

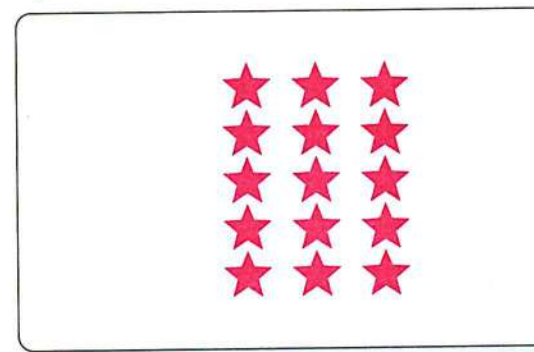
Properties and Patterns of Multiplication

Lesson 4

Commutative Property of Multiplication

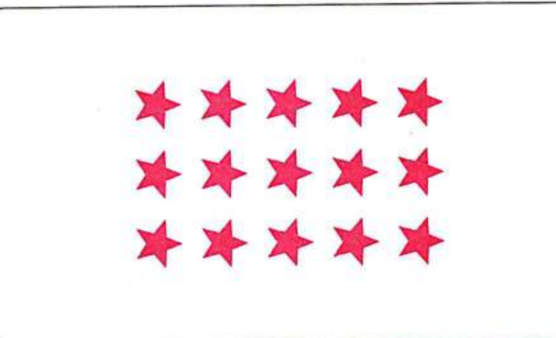
Arrays and the Commutative Property

- Note the following arrays:



5 rows of 3 stars each.

$5 \times 3 = 15$

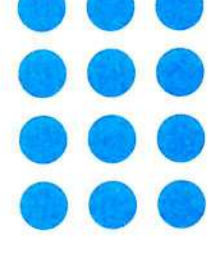


3 rows of 5 stars each.

$3 \times 5 = 15$

So, $5 \times 3 = 3 \times 5$

- In the opposite array:



4 rows , 3 circles in each row: $4 \times 3 = 12$

3 columns , 4 circles in each column: $3 \times 4 = 12$

So, $4 \times 3 = 3 \times 4$

- From above, we find that:

$5 \times 3 = 3 \times 5$, $4 \times 3 = 3 \times 4$

That is, the product of multiplication is not affected by changing the places of the factors in the multiplication process (Commutative Property).

1 Complete the following:

(a) $5 \times$ .... $= 7 \times 5$.

(b) .... $\times 3 = 3 \times 6$.

(c) $8 \times 6 =$ .... $\times 8$.

(d) $9 \times 3 = 3 \times$ ....

2 Use the Commutative Property of Multiplication to find the unknown value:

(a) $5 \times x = 8 \times 5$, x = ...

(b) $y \times 4 = 4 \times 10$, y = ...

(c) $6 \times 3 = 3 \times m$, m = ...

(d) $4 \times 8 = a \times 4$, a = ...

3 Saleh has 30 eggs. Write an equation using the Commutative Property of Multiplication to describe two ways in which he can arrange the eggs.

....

....

....

4 Lamia has 40 books. Write an equation using the Commutative Property of Multiplication to describe two ways in which she can arrange the books.

....

....

....

Lesson 5

Patterns of Multiplying by 10s

• Identity Property of Multiplication:

(The Property of the Neutral Element in the multiplication operation)

Note that: $8 \times 1 = 8$, $1 \times 8 = 8$

So, $8 \times 1 = 1 \times 8 = 8$

That is, the product of any number multiplied by (1) is the same number.

The number "1" is the neutral element in the multiplication operation.

• Zero Property of Multiplication (Multiplying by zero):

Note that: $8 \times 0 = 0$, $0 \times 8 = 0$

So, $8 \times 0 = 0 \times 8 = 0$

The product of any number multiplied by zero is zero.

• Multiplying by 10, 100, 1,000, ...

$6 \times 10 = 60$, $6 \times 100 = 600$, $6 \times 1,000 = 6,000$

- When multiplying by 10 , 100 , 1,000 , ...
- Take out the zeros on the right and then complete the multiplication.

Remember the Place Value Table:

Using the following table of Place Values:

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
			5	3	1	8	6	4	2

We notice that:

- The digit 2 is in the Ones place and its value is 2 = (2 X 1).
- The digit 4 is in the Tens place and its value is 40 = (4 X 10).
- The digit 6 is in the Hundreds place and its value is 600 = (6 x 100).
- The digit 8 is in the Thousands place and its value is 8,000 = (8 X 1,000).
- The digit 1 is in the Ten-thousands place and its value is 10,000 = (1 X 10,000).
- The digit 3 is in the Hundred-thousands place and its value is 300,000 = (3 X 100,000).
- The digit 5 is in the Millions place and its value is 5,000,000 = (5 X 1,000,000).

1 Complete the following:

a) 5 x .... = 0.

b) .... x 7 = 0.

c) .... x 6 = 6.

d) .... x 1 = 9.

e) 1 x .... = 7.

f) 3 x .... = 3.

2 Find the result:

a) 8 x 10 = ...

b) 9 x 100 = ...

c) 1,000 x 6 = ...

d) 12 x 10 = ...

e) 20 x 100 = ...

f) 30 x 1,000 = ...

3 Complete the following:

a) 4 x .... = 40.

b) 8 x .... = 8,000.

c) 6 x .... = 600.

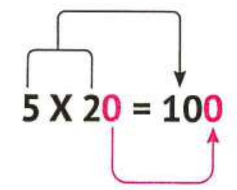
d) 10 x .... = 1,000.

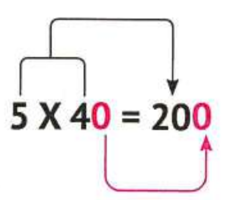
e) .... x 20 = 200.

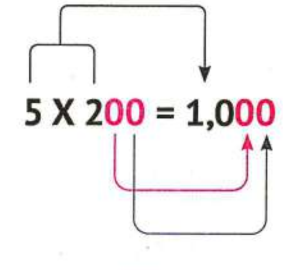
f) 10 x .... = 100.

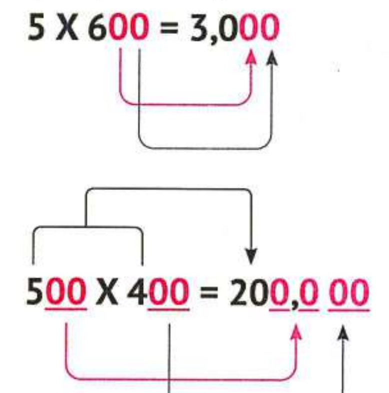
Exploring Patterns in Multiplication

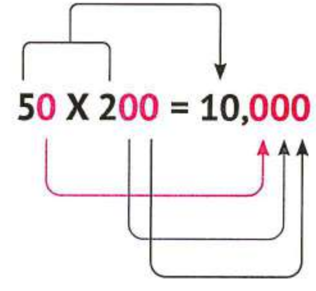
Note That











1 Find the result:

a) 60 x 20 = ...

b) 50 x 30 = ...

c) 50 x 800 = ...

d) 50 x 200 = ...

(e) 200 x 500 = ...

(f) 800 x 500 = ...

2 Complete the following:

(a) .... x 20 = 1,000.

(b) .... x 50 = 3,000.

(c) 40 x .... = 20,000.

(d) 500 x .... = 10,000.

(e) .... x 10 = 50,000.

(f) 80 x .... = 8,000.

3 **The length of the ant is about 2 mm. If the length of the crocodile is 1,000 times the length of the ant, find the length of the crocodile.**

....

....

....

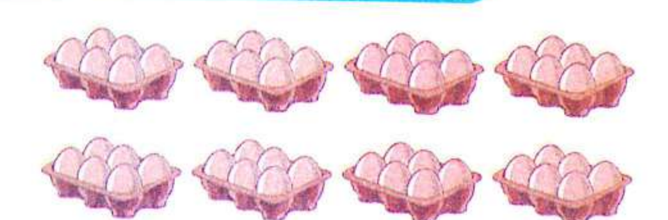
....

Lesson 7

Exploring More Patterns in Multiplication

Associative Property of Multiplication

Example:



In the opposite picture, there are:

Each plate contains 6 eggs. *Each row contains 4 egg plates.* *Two rows of egg plates.*

To calculate the number of eggs = 6 x 4 x 2

The First Method:
- Number of plates = **4 x 2 = 8** egg plates.
- The total number of eggs = **8 x 6 = 48** eggs.

$$6 \times 4 \times 2 = (4 \times 2) \times 6 = 8 \times 6 = 48$$

The Second Method:
- Number of eggs in each row = **6 x 4 = 24**
- The total number of eggs = **24 x 2 = 48** eggs.

$$6 \times 4 \times 2 = (6 \times 4) \times 2 = 24 \times 2 = 48$$

So, $(4 \times 2) \times 6 = (6 \times 4) \times 2$

When multiplying more than one number, any two numbers can be multiplied first and this does not affect the result.

(Associative Property)

1 Find using the Associative Property:

ⓐ 5 x 3 x 2 = (.............. x ....) x .... = ... x .... = ...

ⓑ 3 x 4 x 2 = (.............. x ....) x .... = ... x .... = ...

ⓒ 2 x 5 x 4 = ... x (.............. x ....) = ... x .... = ...

ⓓ 10 x 6 x 5 = ... x (.............. x ....) = ... x .... = ...

2 Complete the following:

ⓐ (5 x ....) x 6 = ... x (3 x 6).

ⓑ (.............. x 6) x 4 = 3 x (6 x ....).

ⓒ (9 x 2) x .... = ... x (2 x 7).

ⓓ (2 x ....) x 8 = ... x (7 x 8).

3 Use the Distributive Property in Multiplication to count the number of eggs in the picture.

....

....

....

4 Emad bought 4 packs of water bottles. Each package contains two rows of bottles, each row has 5 bottles.

How many bottles of water did Emad buy?

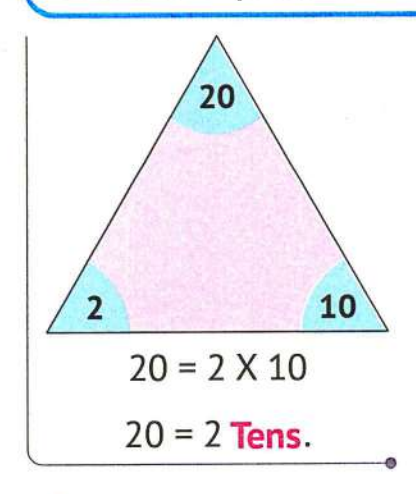
....

....

....

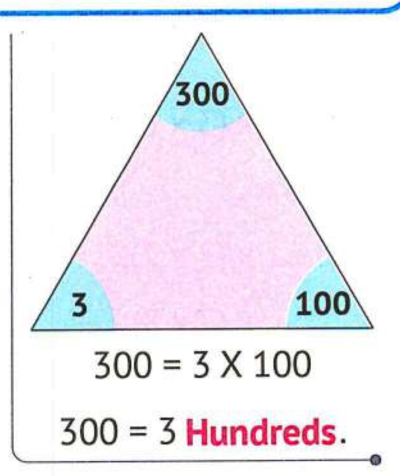
Applying Patterns in Multiplication

Decomposition of Multiples of 10:



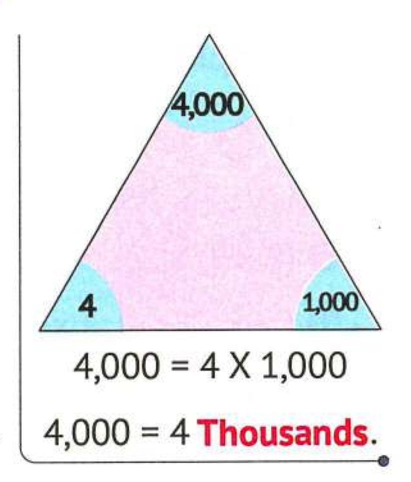
20 = 2 X 10

20 = 2 **Tens**.



300 = 3 X 100

300 = 3 **Hundreds**.



4,000 = 4 X 1,000

4,000 = 4 **Thousands**.

Example:

Use Decomposition of a number into its factors and Associative Property of Multiplication to solve each of the following:

(a) 20 x 7 (b) 8 x 300 (c) 6 x 5,000

Solution:

(a) 20 X 7

= (10 X 2) X 7

= 10 X (2 X 7)

= 10 X 14

= 140.

(b) 8 X 300

= 8 X (3 X 100)

= (8 X 3) X 100

= 24 X 100

= 2,400.

(c) 6 X 5,000

= 6 X (5 X 1,000)

= (6 X 5) X 1,000

= 30 X 1,000

= 30,000.

1 Complete the following:

ⓐ 40 = ... x 4.

ⓑ 600 = ... x 6.

ⓒ 80 = ... Tens.

ⓓ 500 = ... Hundreds.

ⓔ 6,000 = ... Hundreds.

2 Use Decomposition of a number into its factors and Associative Property of Multiplication to solve each of the following:

ⓐ 8 x 30 = 8 x (.................. x ....) = (8 x ....) x ....

= .... x .... = ...

ⓑ 6 x 40 = 6 x (.................. x ....) = (6 x ....) x ....

= .... x .... = ...

ⓒ 5 x 800 = 5 x (.................. x ....) = (.................. x ....) x ....

= .... x .... = ...

ⓓ 9 x 700 = ...

....

ⓔ 5 x 8,000 = ...

....

ⓕ 7 x 6,000 = ...

....

Unit 6 Understanding Factors and Multiples

Lesson 1

Identifying Factors

Learning Objectives:

At the end of this lesson, the student will be able to:

- Define the factors of any integer.
- Find all the factors of a given number between 0 and 100.
- Explain the patterns they notice in numbers whose factors are 2, 5 or 10.

Lesson 2

Prime and Composite Numbers

Learning Objectives:

At the end of this lesson, the student will be able to:

- Find all the factors of a given number between 0 and 100.
- Explain the patterns he/she notices in numbers that have a factor of 2, 3, 5, 6 or 9.
- Determine whether a number is prime or not.

Lesson 3

Greatest Common Factor (G.C.F.)

Learning Objectives:

By the end of this lesson, the student will be able to:

- Find the common factors of two integers.
- Determine the greatest common factor of two integers.

Lesson 4

Identifying Multiples of Whole Numbers

Learning Objectives:

By the end of this lesson, the student will be able to:

- Define multiples of integers.
- Determine multiples of integers.

Lesson 5

Common Multiples

Learning Objectives:

By the end of this lesson, the student will be able to:

- Determine the common multiples of two numbers.

Lesson 6

Relationships Between Factors and Multiples

Learning Objectives:

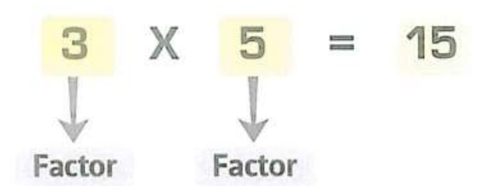
By the end of this lesson, the student will be able to:

- Explain the relationship between factors and complications.
- Determine whether a number is a multiple or a factor of another number.

Concept 6.1 Understanding Factors

Lesson 1

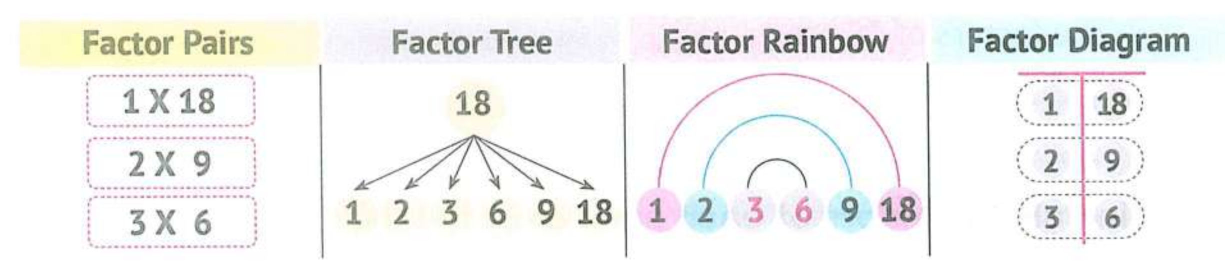
Identifying Factors of Whole Numbers



- From the above, we find that (3) is one of the factors of the number 15 and (5) is one of the factors of the number 15.

Example (1): **Find all the factors of the number 18.**

Factors of 18 can be found in several ways:

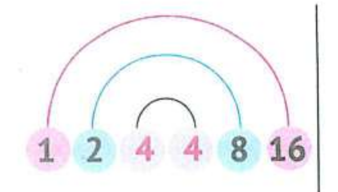


From the above, we find that the factors of 18 are 1, 2, 3, 6, 9, 18.

Example (2): **Find all the factors of 16.**

The factors of 16 are:

1 , 2 , 4 , 8 , 16



1	16
2	8
4	4

Notes

- Factors are written **without** repetition.
- The number **(1)** is a factor of **all numbers**.
- Any number has at least **two factors**, the number itself and one, except the number **(1)** has **only one factor**.

1 **Find all the factors of each number using the Rainbow and the Factor Diagrams:**

a) 12:

The factors of 12 are:

....

....

b) 40:

The factors of 40 are:

....

....

c) 36:

The factors of 36 are:

....

....

2 **Find all the factors of each number of the following: (Use the method you prefer):**

a) 25

b) 48

c) 19

The factors of 25 are:

....

....

The factors of 48 are:

....

....

The factors of 19 are:

....

....

3 Using the following table:

Color the multiples of 2, the multiples of 5 and the multiples of 10, in different colors.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

a Write three numbers whose factors are 2, 5, 10:

....

....

b Circle the factors of the following numbers:

(1) 15 (2 , 5 , 10)

(2) 30 (2 , 5 , 10)

(3) 12 (2 , 5 , 10)

(4) 25 (2 , 5 , 10)

(5) 36 (2 , 5 , 10)

Prime and Composite Numbers

Number (2):

- It is the factor of a number if this number is an **even** one.

  (Ones $\Rightarrow$ 0, 2, 4, 6, 8).

Example: **2 is a factor of 14 because it is an even number.**

Number (3):

- It is the factor of a number if the **sum** of the digits of this number is a **multiple of (3)**.

Example: **3 is a factor of 72 because $2 + 7 = 9$, 9 is a multiple of 3.**

Number (9):

- It is the factor of a number if the **sum** of the digits of this number is **a multiple of (9)**.

Example: **9 is a factor of 126 because $6 + 2 + 1 = 9$ and 9 is a multiple of 9.**

Number (6):

- It is the factor of a number if this number is an **even number** and the **sum** of the digits of this number is **a multiple of (3)** or that 2 and 3 are **factors** of this number.

Example: **6 is a factor of 96 because it is an even number and $6 + 9 = 15$**
Also, the number 15 is a multiple of (3).

Number (5):

- It is the factor of a number if the **Ones** digits of the number is "0" or "5".

Example: **5 is a factor of 80 as its Ones digit is 0.**

1 Complete the following table as in the example:

Number	Factors of the Number				
	2	3	6	9	5
Ex. 24	✓	✓	✓	✗	✗
a 15	....	....	....	....	....
b 36	....	....	....	....	....
c 10	....	....	....	....	....
d 18	....	....	....	....	....
e 40	....	....	....	....	....
f 63	....	....	....	....	....

Prime Numbers:

- Are numbers that have only **two factors**, *(the **same number** and **one**).*

The factors of 6 are: (1, 2, 3, 6) ⇒ 4 factors

So, the number 6 is not a prime number.

The factors of 5 are: (1, 5) ⇒ 2 factors

So, the number 5 is a prime number.

The factors of 1 are: (1) ⇒ Only one factor

So, the number 1 is not a prime number.

2 Using the following table:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Circle the numbers (2, 3, 5, 7), then cross out all the multiples of these numbers. Circle all the remaining numbers, except one. The numbers enclosed in a circle are:

....

....

....

....

(These are the prime numbers less than 100)

Note

- **All** prime numbers are **odd** numbers, except **2** is an **even** number.

3 Write down all the factors of the following numbers. Then write if the number is a prime one or not:

Number	Factors of the Number	Prime Number or Not
a 14	....	....
b 46	....	....
c 22	....	....
d 59	....	....
e 50	....	....
f 29	....	....

4 Complete the following:

a An even number between 20 and 30. Some of its factors are 1, 2, 4, 7 and 14.

The number is: ....

....

b An even number greater than 40 and less than 60 with 10 factors.

The number is: ....

....

c A two-digit number, 5 and 7 are from its factors, the Tens place digit is less than the Ones place digit.

The number is: ....

....

Lesson 3

Greatest Common Factor (G.C.F.)

To find the greatest common factor between two numbers, we follow these steps:

1. **Find** the factors of each number through one of the previous methods.
2. **Rearrange** these factors from **least to greatest**.
3. **Determine** the **common factors** between the two numbers.
4. The **largest number** in the common factors is the **Greatest Common Factor** (G.C.F.).

Example: **Find the common factors of the numbers 18 and 24. Then find the greatest common factor (G.C.F.) for them:**

1	18
2	9
3	6

1	24
2	12
3	8
4	6

- Factors of the number 18 are: 1 , 2 , 3 , 6 , 9 , 18.
- Factors of the number 24 are: 1 , 2 , 3 , 4 , 6 , 8 , 12 , 24.
- The common factors of 18 and 24 are : 1 , 2 , 3 , 6.
- The **greatest common factor** (G.C.F.) is : 6.

1 **Find the greatest common factor of each of the following numbers:**

ⓐ 12 and 16.

Factors of the number 12 are: ....

Factors of the number 16 are: ....

The common factors are: ....

The greatest common factor (G.C.F.) is: ....

ⓑ 20 and 30.

Factors of the number 20 are: ....

Factors of the number 30 are: ....

The common factors are: ....

The greatest common factor (G.C.F.) is: ....

ⓒ 21 and 35.

Factors of the number 21 are: ....

Factors of the number 35 are: ....

The common factors are: ....

The greatest common factor (G.C.F.) is: ....

ⓓ 11 and 15.

Factors of the number 11 are: ....

Factors of the number 15 are: ....

The common factors are: ....

The greatest common factor (G.C.F.) is: ....

2 The fourth grade of primary school students will go on a school trip. There are 36 girls and 27 boys. The pupils will be divided into equal groups of girls and equal groups of boys.
What is the largest number of groups that can be formed so that each group has the same number of pupils?
How many boys are in each group of boys? How many girls are in each group of girls?

....

....

....

....

3 Amira and her friends are going for a walk. Amira wants to take apple snacks and some candy in the journey. She has 24 apples and 36 small bags of candy.
How many snacks can Amira take if each package contains exactly the same number of apples and the exact same number of candy bags?
How many apples are there in each package?
How many bags of candy are there in each package?

....

....

....

....

Concept 6.2 Understanding Multiples

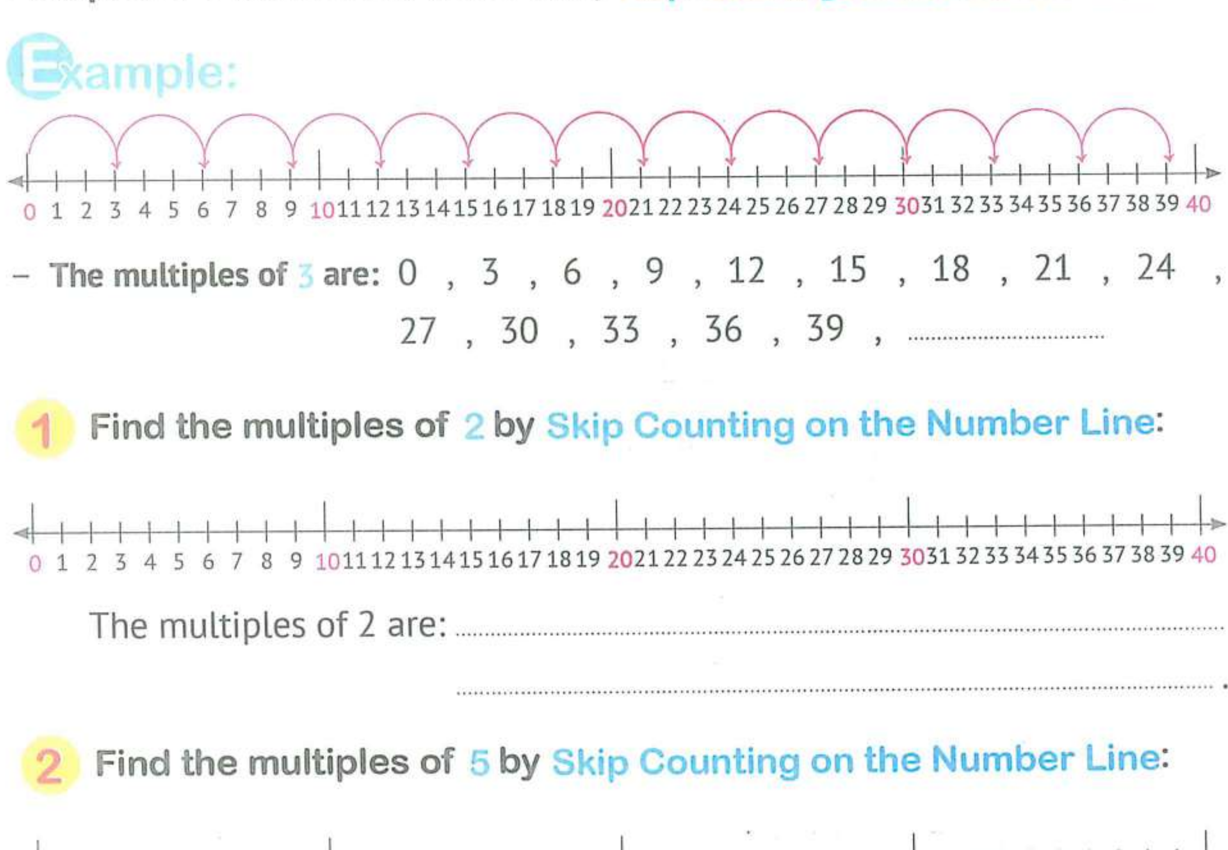
Lesson 4

Identifying Multiples of Whole Numbers

The Multiple

- A multiple is the product of a given integer multiplied by any other integer.
- 12 is a multiple of 3 and 4 because $3 \times 4 = 12$.

Multiples of a number can be found by Skip Counting on the Number Line:



– **The multiples of 3 are:** 0 , 3 , 6 , 9 , 12 , 15 , 18 , 21 , 24 , 27 , 30 , 33 , 36 , 39 , ...

1 **Find the multiples of 2 by Skip Counting on the Number Line:**

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

The multiples of 2 are: ....

....

2 **Find the multiples of 5 by Skip Counting on the Number Line:**

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

The multiples of 5 are: ....

....

3 Use the following hundred table and color the multiples:

ⓐ Color the multiples of 4.

The multiples of 4 are:

....

....

....

....

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

ⓑ Color the multiples of 10.

The multiples of 10 are:

....

....

....

....

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

4 Answer the following:

ⓐ Skip Count by 8 and fill in the blanks:

.... , 8 , ... , 24 , ... , ... , 48 , ... , ... , ... , ...

ⓑ Write 10 multiples of 6: ....

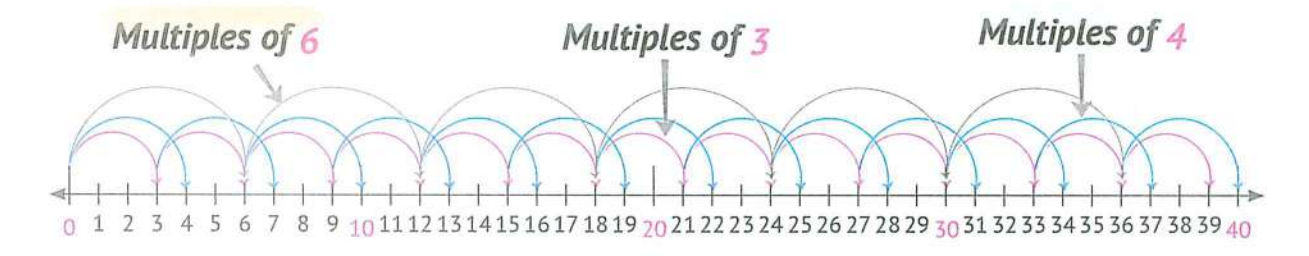
ⓒ Write 5 multiples of 7: ....

ⓓ Circle the numbers that are multiples of 9:

19 , 27 , 54 , 99 , 39 , 42 , 36 , 45 , 66 , 78 , 100.

Common Multiples

Example: Find the multiples of 3, 4 and 6 using Skip Counting on the Number Line:



- The multiples of 3 are : 0 , 3 , 6 , 9 , 12 , 15 , 18 , 21 , 24 , 27 , 30 , 33 , 36 , 39.
- The multiples of 4 are : 0 , 4 , 8 , 12 , 16 , 20 , 24 , 28 , 32 , 36 , 40.
- The multiples of 6 are : 0 , 6 , 12 , 18 , 24 , 30 , 36.
- The common multiples of 3 , 4 and 6 : 0 , 12 , 24 , 36.

1 Find the multiples of each of the numbers 2 and 3, up to 20. Then find the common multiples between them:

- The multiples of 2 are: ....

....

- The multiples of 3 are: ....

....

- The common multiples of the two numbers are: ....

....

2 **Find the multiples of each of the numbers 4 and 6, up to 30. Then find the common multiples between them:**

- The multiples of 4 are: ....
- The multiples of 6 are: ....
- The common multiples of the two numbers are: ....

....

3 **Find the two common multiples between each of the following:**

a) The two numbers 4 and 8: (.................... and ....)

b) The two numbers 2 and 5: (.................... and ....)

c) The two numbers 6 and 8: (.................... and ....)

d) The two numbers 7 and 6: (.................... and ....)

Note

- The product of any two numbers is a common multiple of them.

4 **Complete:**

a) The common multiples of 2 and 5 are:

0 , 10 , 20 , 30 , ... , ... , ... , ...

b) The common multiples of 3 and 4 are:

0 , 12 , 24 , 36 , ... , ... , ... , ...

c) The common multiples of 6 and 8 are:

0 , 24 , 48 , ... , ... , ...

Lesson 6

Relationships Between Factors and Multiples

Remember:

4 X 7 = 28

Factor Factor Multiple

- From this figure:

4 and 7 are factors of 28 & *28 is a multiple of 4 and 7*

Complete the following:

a) If 35 = 5 x 7, then .... is a multiple of the two numbers .... and .... , then .... and .... are factors of the number ....

b) If .... = ... x ...., then 48 is a multiple of the two numbers of 6 and .... Then, 6 and .... are factors of the number ....

c) An even number is a multiple of 3, 4 and 6 and lies between 20 and 30. The number is ....

d) An odd number is a multiple of 3 and 6 and lies between 20 and 40. The number is ....

e) The relationship between 2, 3 and 6 is that ....
....

Unit 7

Multiplication and Division: Computation and Relationships

Lesson 1

The Area Model Strategy

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use Rectangle Area Models to represent the multiplication of a 2-digit-number by a 1-digit-number.
- Explain how to use place value in multiplication.

Lesson 2

The Distributive Property

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use the Rectangle Area Model to multiply a 1-digit-number by an integer up to four digits.
- Explain the Distributive Property of Multiplication.
- Use the Distributive Property of Multiplication to multiply a 1-digit-number by an integer up to four digits.

Lesson 3

The Partial Products Algorithm

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use the Partial Products Algorithm to multiply a one-digit-number by an integer up to four digits.

Lesson 4

The Standard Multiplication Algorithm

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use Estimation to find the product of the multiplication process in multi-digit-number problems.
- Use the Standard Algorithm to multiply a one-digit-number by an integer up to four digits.

Lesson 5

Connecting Strategies

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use the Standard Algorithm to multiply a one-digit-number by an integer up to four digits.

Lesson 6

Two-Digit Multiplication

Learning Objectives:

By the end of this lesson, the student will be able to:

- Recognize patterns when multiplying two multiples of 10.
- Multiply a two-digit-number by a multiple of 10.
- Evaluate the reasonableness of the answer that was assessed using Estimation and Mental Arithmetic.

Lesson 7

Area Models and 2-Digit Multiplication

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use the Area of a Rectangle Model to solve the problems of multiplying a two-digit-number by a two-digit-number.

Lesson 8

Algorithms and 2-Digit Multiplication

Learning Objectives:

By the end of this lesson, the student will be able to:

- Apply a variety of strategies to solve a two-digit-number multiplying a two-digit-number problems.

Lesson 9

Putting It All Together

Learning Objectives:

By the end of this lesson, the student will be able to:

- Apply the Three-time Reading Strategy to analyze and solve word problems.
- Use addition, subtraction, or multiplication to solve word problems.

Lesson 10

Exploring Remainders

Learning Objectives:

By the end of this lesson, the student will be able to:

- Determine the dividend, the divisor and the quotient in the division question.
- Solve division problems.
- Explain what the remainder of the division represents in the division problem.

Lesson 11

Patterns and Place Value in Division

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use the concept of place value, the facts of the multiplication process and the patterns used with zeros to divide the multiples of 10, 100, 1,000 by a one-digit-divisor.

Lesson 12

The Area Model

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use Rectangle Area Models to represent and solve division problems.

Lesson 13

The Partial Quotients Algorithm

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use a Partial Quotient Algorithm to divide up to four-digit-dividend by one-digit-divisors.

Lesson 14

The Standard Division

Learning Objectives:

By the end of this lesson, the student will be able to:

- Estimate quotients using place value properties and patterns of multiplication and division.
- Use the Standard Algorithm to solve division problems.

Lesson 15

Division and Multiplication

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use the place value properties to find the quotient accurately.
- Use the relationship between multiplication and division to check the accuracy of the quotient.

Lesson 16

Solving Challenging

Learning Objectives:

By the end of this lesson, the student will be able to:

- Organize information into word problems to determine when to add, subtract, multiply, or divide.
- Solve word problems using addition, subtraction, multiplication and division.

Multiplying by 1-Digit and 2-Digit Factors

The Area Model Strategy

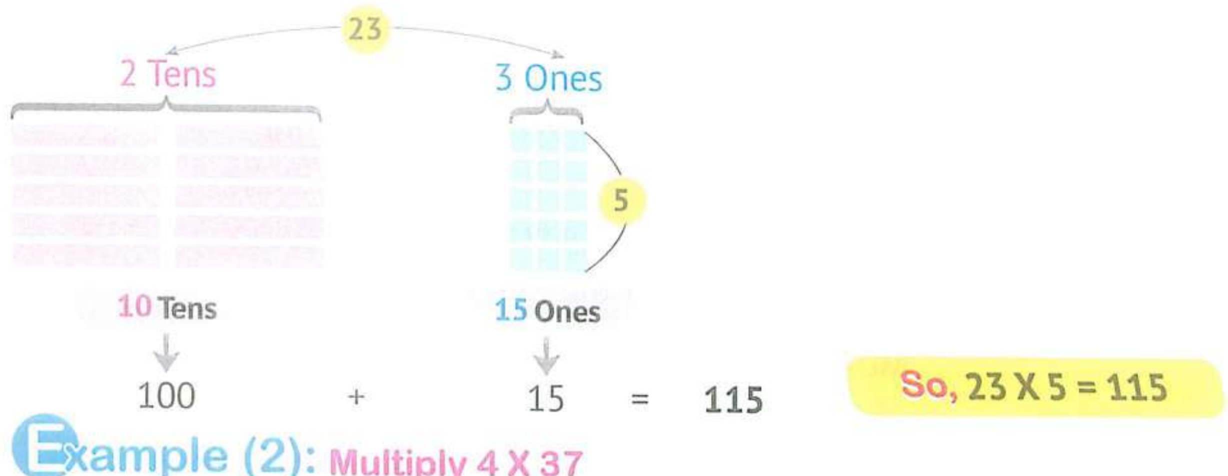
First: Base Ten Blocks Strategy:

When multiplying a 1-digit-number by a 2-digit-number,

- We represent the 2-digit-number, the Tens with lines and Ones with small squares.
- We repeat the number according to the 1-digit-number.

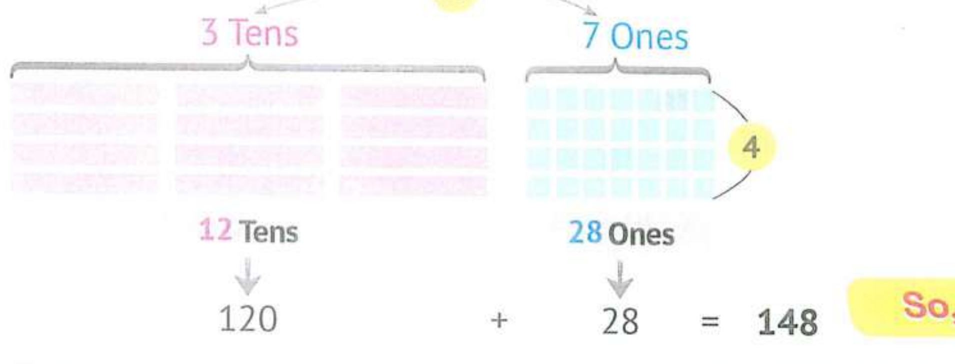
Example (1): Multiply 23 X 5

- The number 23 is represented by two lines and 5 small squares repeated 5 times as follows:



So, 23 X 5 = 115

Example (2): Multiply 4 X 37



So, 4 X 37 = 148

1 Multiply using the Base-10 Blocks Strategy:

ⓐ 16 X 4 = ……………………… .

ⓑ 28 X 3 = ……………………… .

ⓒ 34 X 5 = ……………………… .

Second: Rectangle Area Model Strategy:

When multiplying a 1-digit-number by a 2-digit-number,

- Draw a rectangle.
- Represent the 2-digit-number with the **long side** and the 1-digit-number with the **short side**.
- Divide the rectangle into **two parts** by drawing **a vertical line** to represent the **decomposition** of the 2-digit-number.

Example (1): Multiply 23 X 5

23 X 5 = 115

20	3	
5 X 20 = 100	5 X 3 = 15	5

100 + 15 = 115

Example (2): Multiply 6 X 78

6 X 78 = 468

70	8	
6 X 20 = 420	6 X 8 = 48	6

420 + 48 = 468

2 Use the Rectangle Area Model Strategy to multiply:

ⓐ 5 X 24 = ...

.... X .... = ...	.... X .... = ...

.... + ... = ...

ⓑ 9 X 58 = ...

.... X .... = ...	.... X .... = ...

.... + ... = ...

ⓒ 67 X 4 = ...

.... X .... = ...	.... X .... = ...

.... + ... = ...

ⓓ 98 X 7 = ...

.... X .... = ...	.... X .... = ...

.... + ... = ...

3 A car travels 78 kilometers in one hour. How many kilometers will the car travel in 9 hours?

(Use the Rectangle Area Model in the solution).

....

....

.... X .... = ...	.... X .... = ...

.... + ... = ...

4 The school bus carries 23 students per trip. What is the maximum number of students that the bus can carry during 6 trips?

(Use the Rectangle Area Model in the solution).

....

....

.... X .... = ...	.... X .... = ...

.... + ... = ...

The Distributive Property

Remember that:

Expanded Form

456 = 400 + 50 + 6

729 = 700 + 20 + 9

3,729 = 3,000 + 700 + 20 + 9

5,392 = 5,000 + 300 + 90 + 2

The Distributive Property of Multiplication

$$6 \times (5 + 3) = (6 \times 5) + (6 \times 3)$$

$$3 \times (400 + 20 + 4) = (3 \times 400) + (3 \times 20) + (3 \times 4)$$

- **Using the Distributive Property to multiply a one-digit-number by an integer up to 4 digits (numbers and symbols).**

Example (1): Multiply 4 X 237

Answer:

4 X 237 ← *Decompose the largest number (Expanded form)*

= 4 X (200 + 30 + 7) ← *Multiply the digit 4 by the components of the number 237*

= (4 X 200) + (4 X 30) + (4 X 7)

= 800 + 120 + 28 = 948

Example (2): Multiply 6 X 5,819

Answer:

6 X 5,819

= 6 X (5,000 + 800 + 10 + 9)

= (6 X 5,000) + (6 X 800) + (6 X 10) + (6 X 9)

= 30,000 + 4,800 + 60 + 54 = 34,914

1 Use the Distributive Property to solve the following problems:

ⓐ 4 X 312 = 4 X (.................... + ... + ...)

= (4 X ....) + (4 X ....) + (4 X ....)

= .... + ... + ... = ...

ⓑ 6 X 374 = ... X (.................... + ... + ...)

= (.............. X ....) + (.............. X ....) + (.............. X ....)

= .... + ... + ... = ...

ⓒ 9 X 5,234 = ... X (.................... + ... + ...)

= (.............. X ....) + (.............. X ....) + (.............. X ....)

= .... + ... + ... = ...

ⓓ 4 X 2,687 = ... X (.................... + ... + ...)

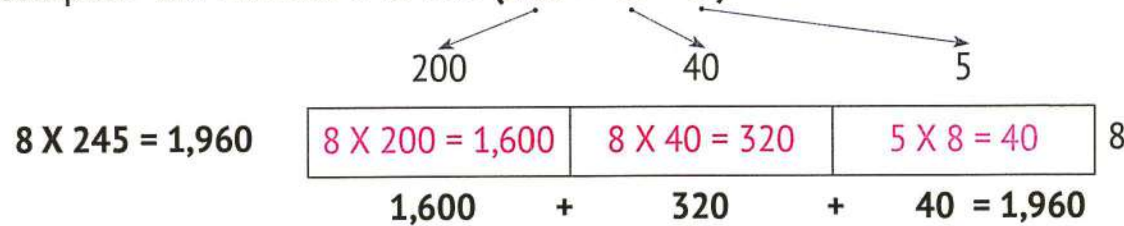
= (.............. X ....) + (.............. X ....) + (.............. X ....)

= .... + ... + ... = ...

– **Using the Rectangle Area Model to multiply a 1-digit-number by an integer up to 4 digits.**

Example (1): Multiply 8 X 245

- Draw a rectangle and divide it into 3 parts.
- Decompose the number 245 into **(200 + 40 + 5)**



Example (2): Multiply 7 X 6,312

	6,000	300	10	2	
7 X 6,312 = 44,184	7 X 6,000 = 42,000	7 X 300 = 2,100	7 X 10 = 70	7 X 2 = 14	7

42,000 + 2,100 + 70 + 14 = 44,184

2 **Use the Area Model of a Rectangle to solve the following problems:**

ⓐ 8 X 375 = ...

....

ⓑ 9 X 216 = ...

....

c) 3 X 6,475 = ...

d) 4,962 X 8 = ...

3 The length of the car is 245 cm, how long are 4 cars?

(Use the Rectangle Area Model)

The Partial Products Algorithm

The Partial Products Algorithm

Each arithmetic operation is a **"part"** of a larger product.

Ex.1: Multiply 7 X 328

Answer: ***Expand the largest number:***

(328 = 300 + 20 + 8)

			3 2 8
		X	7
Step 1: Multiply the 1-digit-number by the **Hundreds**.	(7 X 300)	+	2,100
Step 2: Multiply the 1-digit-number by the **Tens**.	(7 X 20)	+	140
Step 3: Multiply the 1-digit-number by the **Ones**.	(7 X 8)	+	56
Step 4: Add the products of the Hundreds, Tens and Ones.			2,296

Ex.2: Multiply 9 X 83

		83
	X	9
(9 X 80)		720
(9 X 3)	+	27
		747

Ex.3: Multiply 6 X 3,702

		3 702
	X	6
(6 X 3,000)	+	18,000
(6 X 700)	+	4,200
(6 X 2)	+	12
		22,212

1 Use the Partial Products Algorithm to multiply:

ⓐ 8 X 256 = ...

```
                          2 5 6
                      X       8
                      ---------
( ......... X ......... ) .........
( ......... X ......... ) .........
( ......... X ......... ) .........
                      ---------
                        .........
```

ⓑ 3,986 X 6 = ...

```
                          3,986
                      X       6
                      ---------
( ......... X ......... ) .........
( ......... X ......... ) .........
( ......... X ......... ) .........
( ......... X ......... ) .........
                      ---------
                        .........
```

ⓒ 9 X 63 = ...

```
                             63
                      X       9
                      ---------
( ......... X ......... ) .........
( ......... X ......... ) + .......
                      ---------
                        .........
```

ⓓ 8 X 702 = ...

```
                            702
                      X       8
                      ---------
( ......... X ......... ) .........
( ......... X ......... ) + .......
                      ---------
                        .........
```

ⓔ 125 X 4 = ...

ⓕ 9 X 8,465 = ...

The Standard Multiplication Algorithm

Similarities in Models

Example: Multiply 132 X 8

- Using the **Product Estimation of the multiplication process**, the **Area Model of the Rectangle** and the **Partial Products Algorithm**.

The Product Estimation	The Area of Rectangle Model	Partial Products Algorithm
Estimation 100 X 8 = 800	100 30 2 [100X8=800 | 30X8=240 | 2X8=16] 8 **800 + 240 + 16 = 1,056**	132 X 8 (8 X 100) 800 (8 X 30) + 240 (8 X 2) + 16 1,056

We notice that: the estimate is low because we rely on "Rounding Down Strategy".

1 **Complete the following table:**

Problem	Product Estimation	Area of Rectangle Model	Partial Products Algorithm
ⓐ 237 X 6			

ⓑ 7,425 X 9 = ...			

The Standard Multiplication Algorithm:

Follow the steps below to multiply 132 x 8 using the Standard Multiplication Algorithm:

① Write the numbers **vertically** with the **largest number** on **top**.

② Start by multiplying the **Ones** (8 **Ones** x 2 **Ones** = 16 **Ones**).

③ Write the number **6** in the **Ones** place below the line.

④ Write the number **1** representing **one Ten** above the number 3 (this is called **Renaming**).

⑤ Next, multiply the **Tens** (8 **Ones** x 3 **Tens** = 24 **Tens**).

⑥ Add **one Ten** (from the previous step) to **24 Ten** to get **25 Ten**.

⑦ Write the number **5** in the **Tens place** below the line.

⑧ Rename by writing the number **2** representing **two Hundred** above the number 2 in the **Hundreds** place.

⑨ And finally, multiply the **Hundreds** (8 **Ones** x one **Hundred** = 8 **Hundreds**).

⑩ Add **two hundred** (from the previous step) plus **8 Hundreds** to get **10 Hundreds**.

10 Hundreds = one thousand. Write 0 in the **Hundreds place** and 1 in the **Thousands place** below the line.

```
   ② ①
    1 3 2
X       8
---------
        6
+     5 0
+ 1,0 0 0
---------
  1,0 5 6
```

2 Use the Standard Multiplication Algorithm to multiply:

a)
$$\begin{array}{r} 48 \\ \times \quad 7 \\ \hline \end{array}$$

b)
$$\begin{array}{r} 324 \\ \times \quad 6 \\ \hline \end{array}$$

c)
$$\begin{array}{r} 3,248 \\ \times \quad 9 \\ \hline \end{array}$$

d)
$$\begin{array}{r} 36 \\ \times \quad 6 \\ \hline \end{array}$$

e)
$$\begin{array}{r} 298 \\ \times \quad 4 \\ \hline \end{array}$$

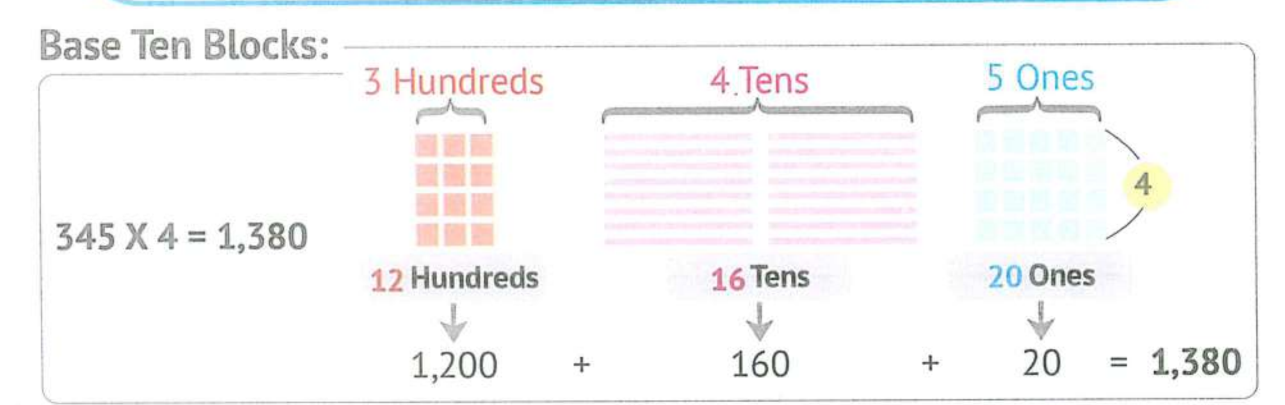
f)
$$\begin{array}{r} 7,866 \\ \times \quad 5 \\ \hline \end{array}$$

Lesson 5

Connecting Strategies

Strategies for Multiplying a One-digit-number by an Integer up to Four Digits

Base Ten Blocks:



Area of Rectangle Model:

345 X 4 = 1,380

300	40	5	
4 X 300 = 1,200	4 X 40 = 160	4 X 5 = 20	4
1,200 +	160 +	20	= 1,380

Distributive Property:

4 X 345 = 4 X (300 + 40 + 5)
= (4 X 300) + (4 X 40) + (4 X 5)
= 1,200 + 160 + 20 = 1,380

Standard Multiplication Algorithm:

```
  ①②
   345
X    4
------
     0
+   80
+ 1,300
------
 1,380
```

Partial Products Algorithm:

```
                 345
             X     4
             -------
( 4 X 300 )    1,200
( 4 X  40 )  +   160
( 4 X   5 )  +    12
             -------
               1,380
```

1 Use the **Standard Multiplication Algorithm** to multiply (as in the example):

Ex.:

```
   ③⑥
   2 4 8
X      8
--------
 1,9 8 4
```

ⓐ

```
  387
X   4
-----
```

ⓑ

```
   45
X   6
-----
```

ⓒ

```
  614
X   7
-----
```

ⓓ

```
2,375
X   9
-----
```

ⓔ

```
5,008
X   5
-----
```

2 Use the following strategies to solve each problem:

ⓐ 456 X 7 = ...

(Base Ten Blocks strategy)

ⓑ 3 X 124 = ...

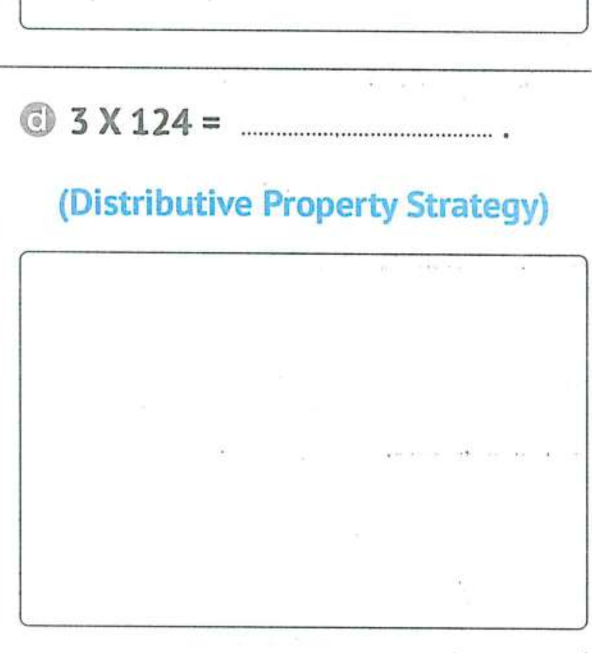
(Area of Rectangle Strategy)

ⓒ 8 X 205 = ...

(Partial Products Algorithm)

ⓓ 3 X 124 = ...

(Distributive Property Strategy)



Lesson 6

Two-Digit Multiplication

Multiply a 2-digit-number by a Multiple of 10

Example: Multiply 62 X 30:

First: Using the Rectangle Area Model Strategy:

62 X 30 = 1,860

	60	2	
	30 X 60 = 1,800	30 X 2 = 60	30

1,800 + 60 = 1,860

Second: Using Distributive Property Strategy:

62 X 30 = (60 + 2) x 30
= (60 X 30) + (2 X 30)
= 1,800 + 60
= **1,860**

Third: Using Partial Products Algorithm:

```
                  6 2
              X   3 0
( 30 X 60 )   1,8 0 0
( 30 X  2 ) +     6 0
              1,8 6 0
```

1 Use the Rectangle Area Model Strategy to multiply:

ⓐ 48 X 20 = ...

ⓑ 40 X 74 = ...

2 Use the **Partial Products Algorithm** to multiply:

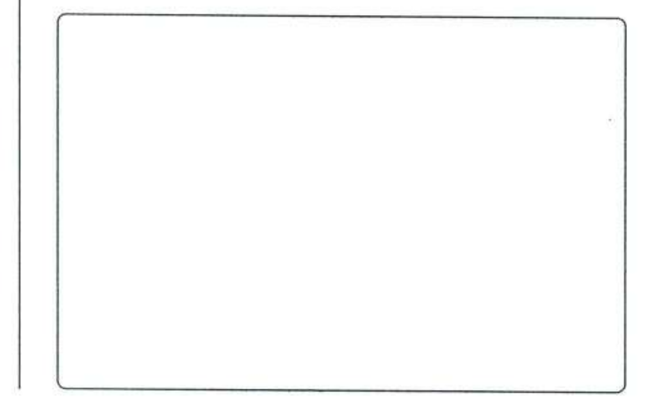
ⓐ 35 X 80 = ...

ⓑ 70 X 82 = ...

3 Use the **Partial Products Algorithm** to multiply:

ⓐ 90 X 85 = ...

ⓑ 27 X 30 = ...



Example:

1

24 X 30 = 720

4 Multiply:

ⓐ 15 X 30 = ...

ⓑ 14 X 50 = ...

ⓒ 42 X 20 = ...

ⓓ 60 X 40 = ...

Area Models and 2-Digit Multiplication

Using the Rectangle Area Model to Multiply a Two-digit-number by a Two-digit-number

Example (1): Multiply 36 X 42 :

- Create the corresponding **rectangle**.
- **Expand** the first number: 36 = 30 + 6

  Then, the second number:

  42 = 40 + 2
- **Multiply** the **rows** and **columns** as shown.
- **Add** the **products** of the multiplication.

36

X	30	6
40	40 X 30 = 1,200	40 X 6 = 240
2	2 X 30 = 60	2 X 6 = 12

42

So, 36 X 42 = 1,200 + 240 + 60 + 12 = 1,512

Example (2): Multiply 27 X 35 :

27 X 35

= 600 + 210 + 100 + 35

= **945**

27

X	20	7
30	20 X 30 = 600	30 X 7 = 210
5	5 X 20 = 100	5 X 7 = 35

35

1 Use the Rectangle Area Model to multiply:

ⓐ 45 X 49

= .... + ... + ... + ...

= ....

X	40	5
40	.... X .... = ...	.... X .... = ...
9	.... X .... = ...	.... X .... = ...

ⓑ 89 X 43

= .... + ... + ... + ...

= ....

X	....	....
....	.... X .... = ...	.... X .... = ...
....	.... X .... = ...	.... X .... = ...

ⓒ 28 X 69

= .... + ... + ... + ...

= ....

X	....	....
....	.... X .... = ...	.... X .... = ...
....	.... X .... = ...	.... X .... = ...

ⓓ 49 X 37

= .... + ... + ... + ...

= ....

X	....	....
....	.... X .... = ...	.... X .... = ...
....	.... X .... = ...	.... X .... = ...

2 Ahmed bought 6 pens. If the price of one pen is 215 piasters, what is the price of all pens?

(Use the Area of a Rectangle Model to solve)

X	....	....	....
....	.... X .... = ...	.... X .... = ...	.... X .... = ...

.... X .... = ... + ... + ... = ...

3 38 persons will travel together by bus, and a single ticket costs 35 pounds. What is the price of the tickets for all passengers?

(Use the Area of a Rectangle Model to solve)

X	....	....
....	.... X .... = ...	.... X .... = ...
....	.... X .... = ...	.... X .... = ...

Algorithms and 2-Digit Multiplication

Multiplying a Two-digit-number by a Two-digit-number

To multiply 76 x 54, we can use one of the multiplication algorithms. We put the two numbers **vertically**, the **larger number above** the **smaller number**, and then follow the steps as shown.

1) Decompose both numbers into Ones and Tens:

(76 = 70 + 6) , (54 = 50 + 4)

2) Multiply the ones of the first number by:

- the Ones of the second number (6 x 4 = 24)
- and the Tens of the second number (6 x 50 = 300)

3) And also multiply the Tens of the first number by:

- the Ones of the second number (70 x 4 = 280)
- and the Tens of the second number (70 x 50 = 3,500)

4) Then, we add all the products:

24 + 300 + 280 + 3,500 = 4,104

Partial Products Algorithm:

```
                 76
            X    54
            -------
( 6 X  4)        24
( 6 X 50)  +    300
(70 X  4)  +    280
(70 X 50)  +  3,500
            -------
              4,104
```

1) Decompose the smallest number into Ones and Tens:

(54 = 50 + 4)

2) Multiply the first number by:

- the Ones of the second number.

(76 x 4 = 304)

3) Multiply the first number by:

- the Ones of the second number.

(76 x 50 = 3,800)

4) Then, we add all the products:

304 + 3,800 = 4,104

Standard Multiplication Algorithm:

```
                 76
            X    54
            -------
(76 X  4)       304
(76 X 50)  +  3,800
            -------
              4,104
```

Find the product of each of the following:

Begin by estimating the product of the multiplication and then solve the problems using the **Partial Product Algorithm** and the **Standard Multiplication Algorithm**.

ⓐ 28 X 53 = ...

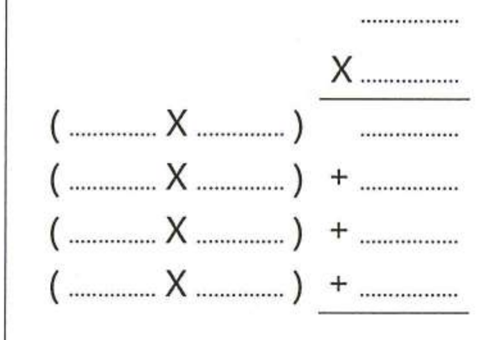
Estimation:

....

.... X

....

Partial Product Algorithm:



....

X ....

(.............. X ....) ....

(.............. X ....) + ...

(.............. X ....) + ...

(.............. X ....) + ...

....

Standard Algorithm:

....

X ....

(.............. X ....) ....

(.............. X ....) + ...

....

ⓑ 67 X 48 = ...

Estimation:

....

.... X

....

Partial Product Algorithm:

....

X ....

(.............. X ....) ....

(.............. X ....) + ...

(.............. X ....) + ...

(.............. X ....) + ...

....

Standard Algorithm:

....

X ....

(.............. X ....) ....

(.............. X ....) + ...

....

ⓒ 95 X 32 = ...

Estimation:

....

.... X

....

Partial Product Algorithm:

....

X ....

(.............. X ....) ....

(.............. X ....) + ...

(.............. X ....) + ...

(.............. X ....) + ...

....

Standard Algorithm:

....

X ....

(.............. X ....) ....

(.............. X ....) + ...

....

Lesson 9

Putting It All Together

Three-time Reading Strategy to Solve Word Problems

First Read → Determine what **happens** in the problem.

Second Read → Determine the **values** in the problem.

Third Read → Determine the **questions** that can be asked in this problem.

Example:

- Aya draws pictures and sells them in art galleries. She takes **56** pounds for the large painting, and **24** pounds for the small painting.
  Last month, Aya sold **six** large paintings and **three** small paintings.

To solve this problem, answer the following questions:

What happens in the problem?

Aya sold 6 large paintings for 56 pounds **each** and 3 small paintings for 24 pounds **each**.

What are the values in the problem?

56 pounds (the price of a large painting) , **24 pounds** (the price of a small painting).

6 large paintings. , 3 small paintings.

What questions can be asked in this problem?

How much money did she get for selling all her paintings?

Answer:

- The price of the 6 large paintings = 6 X 56 = 336 pounds.
- The price of the 3 small paintings = 3 X 24 = 72 pounds.
- The price of all paintings = 336 + 72 = 408 pounds.

1 **On Thursday, a butcher sold 210 kilograms of minced meat. On Friday, he sold twice that amount. On Saturday, he only sold 130 kilograms. How much more quantity did the butcher sell on Friday than on Saturday?**

Answer: ....

....

....

....

....

....

2 **Malik walked 8 km on Friday and 6 km on Saturday.**
Malik repeated this every weekend for 6 weeks.
How many kilometers did Malik walk at the end of the six weeks?

Answer: ....

....

....

....

....

....

3 The premium bus has 76 seats. The number of seats of the premium train is 3 times that of the premium bus, and the number of seats in it is 53 more than the premium ferry.
How many people can the premium bus, the premium train, and the premium ferry accommodate at the same time?

Answer: ....

....

....

....

4 A salesperson must drive 500 km. In the first 3 hours, he was driving at 65 kilometers per hour. Over the next two hours, he traveled 55 kilometers per hour. How many kilometers are left for him to drive?

Answer: ....

....

....

....

....

5 Ahmed drives for two hours and covers 200 kilometers. Mona drives for 3 hours and covers 270 km. Hoda also drives for 3 hours, but travels 70 kilometers less than Mona.
How many kilometers do they all drive?

Answer: ....

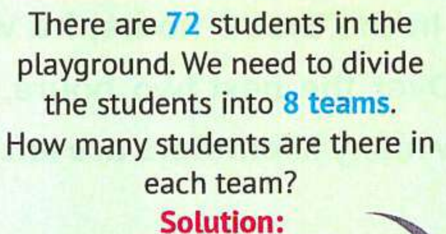
....

....

....

....

Dividing by 1-Digit Divisors

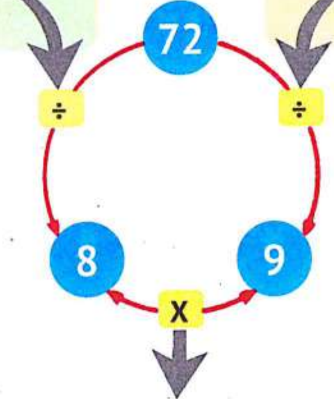


Exploring Remainders

Here are Three Word Problems to be Read Carefully:

There are 72 students in the playground. We need to divide the students into 8 teams.
How many students are there in each team?
Solution:
72 ÷ 8 = 9 students.

There are 72 students in the playground. We need to divide the students into teams, so that each team includes 9 students.
How many teams can be formed?
Solution:
72 ÷ 9 = 8 teams.

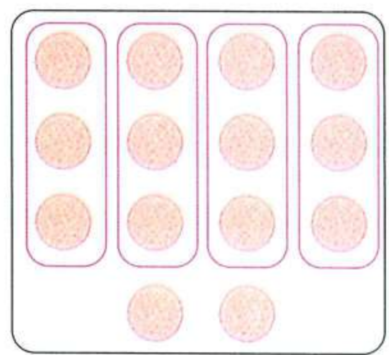


There are 8 teams playing football, and each team has 9 players.
How many students are there in each team?
Solution:
8 x 9 = 72 students.

From the above we note that:

- The numbers are the **same**, and the problems are all about equal groups (teams). **However,** you can use different operations to solve each of these problems.
- **Multiplication:** things are already in equal groups.
- **Division:** things must be divided into equal groups.

Example:



- **Saleem brought 14 pies to give to four of his friends. How can Saleem divide the pies evenly?**

The corresponding graph can be used to solve this problem.

When you divide the pies among the four friends, each person's share will be 3 pies, and the remaining will be 2 pies.

Solution:

14 ÷ 4 = 3 and the remainder is 2.

In the previous question, we find that:

15 ÷ 4 = 3 Remainder (R) 2

Dividend	Divisor	Quotient	Remainder
It is the number that is divided in the problem. (The sum of things)	The number of equal groups or the number in each group.	The answer to the division problem.	The remaining value after all things are divided equally.

1 **Complete the following table:**

Problem	Dividend	Divisor	Quotient	Remainder
ⓐ 25 ÷ 4	....	....	....	....
ⓑ 30 ÷ 6	....	....	....	....
ⓒ 28 ÷ 5	....	....	....	....
ⓓ 16 ÷ 3	....	....	....	....
ⓔ 15 ÷ 2	....	....	....	....

2 The swimming team will take a bus to go to the Swimming competition. Each bus accommodates 40 students. 60 students will attend this competition.
How many buses are required to accommodate all students?
Will there be empty seats? And how many?

Answer: ....

....

....

....

....

3 There are 48 mugs that need to be boxed and shipped.
Each box holds five cups.
How many boxes are needed to ship the cups?

Answer: ....

....

....

....

....

Patterns and Place Value in Division

Dividing Multiples of 10, 100, 1,000 by a 1-digit-number

When dividing multiples of **10**, **100**, **1,000** by a one-digit-number, we do the following:

Example: Divide:

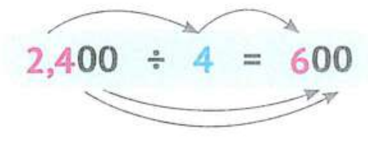
ⓐ 400 ÷ 5 = ... ⓑ 2,400 ÷ 4 = ...

Answer:

ⓐ To divide 400 ÷ 5,
We note that: 5 x 8 = 40
So, 5 x 80 = 400
So, 400 ÷ 5 = 80

400 ÷ 5 = 80

ⓑ To divide 2,400 ÷ 4,
We note that: 4 x 6 = 24
So, 4 X 60 = 240 , 4 X 600 = 2,400
So, 2 400 ÷ 4 = 600



1 **Complete the following table: (As in the example):**

	Equation	Related Fact	Quotient
Ex.	8,000 ÷ 4	8 ÷ 4 = 2	200
ⓐ	4,500 ÷ 9	....	....
ⓑ	15,000 ÷ 5	....	....
ⓒ	8,000 ÷ 4	....	....
ⓓ	8,000 ÷ 4	....	....

2 **Find the quotient:**

ⓐ 2,400 ÷ 8 = ...

ⓑ 2,000 ÷ 4 = ...

ⓒ 10,000 ÷ 5 = ...

ⓓ 3,000 ÷ 6 = ...

3 **8,100 workers need to go to work on Monday morning at 7:00 am, and they all want to go by metro. Each metro train consists of 9 cars. If every car accommodates 90 persons, can all workers ride the same metro to go to work?**

(Explain your ideas using numbers, words, and symbols.)

....

....

....

....

4 **Malik wanted to make falafel. He bought 360 beans from the store. He read that he would need 6 beans for each falafel patty. How many falafel patties can he make with all the beans?**

....

....

....

....

5 **There are 540 colored pencils in a large basket. The pupils were asked to put 9 crayons in a small box for each pupil. How many small boxes will the pupils need to complete this task?**

....

....

....

....

The Area Model and Division

Rectangle Area Model Strategy for Representing and Solving Division Problems

This strategy can be understood through the following examples.

Example (1): Divide 96 ÷ 5

First:

Draw a long rectangle and write "5" to the right side of the rectangle.

	5

Second:

Draw a vertical line inside the rectangle and write in the left part "5 x 10 = 50" (as the divisor is two digits)
And write under this part "10".

5 X 10 = 50		5
(10)		

Third:

By subtracting 96 (the dividend) – 50 = 46.
Divide 46 ÷ 5 = 9
and the remainder is 1.
Write "5 x 9 = 45" in the remaining part of the rectangle and write "9" under this part of the rectangle.

5 X 10 = 50	5 X 9 = 45	5
(10)	(9)	

Fourth:

Adding 9 + 10 = 19 (Quotient).

So: 96 ÷ 5 = 19 and the remainder: 1

The solution can be verified by multiplying the numbers outside of the division by the divisor and then adding the remainder, if any, to get the dividend.

Verification:

19 x 5 = 95 , 95 + 1 = 96 (the dividend).

Example (2): Using the Rectangle Area Model to divide 919 ÷ 8

Hundreds: There is 9 in the Hundreds place = 900

9 hundreds ÷ 4 = 2 hundreds.

The related fact is 4 X 200 = 800.

The remainder = 919 – 800 = 119

Tens: 4 X 10 = 40,

40 is much smaller than 119

4 X 20 = 80

4 X 30 = 120 ,

120 is more than 119.

So, 80 is the closest value to 119.

119 – 80 = 39.

4 X 200 = 800	4 X 20 = 80	4 X 9 = 36
200	20	9

Ones: 3 X 9 = 36.

39 is the closest value to 39.

39 – 36 = 3

(3 is the remainder)

The quotient = 200 + 20 + 9 = 229

So, 919 ÷ 4 = 229 and the remainder is 3

Verification:

229 x 4 = 916 , 916 + 3 = 919 (the dividend).

Example (3): Using the Rectangle Area Model to divide $156 \div 6$

Hundreds: You can't use 6 X 100 = 600.

Because: 600 > 156.

Tens: 6 X 10 = 60,

60 is much smaller than 150.

6 X 20 = 120

6 X 30 = 180,

180 is more than 150.

So, 120 is the closest value to 156.

156 – 120 = 36.

Ones: 6 X 6 = 36.

36 – 36 = 0.

(No remainder)

120 + 36 = 156

6 X 20 = 120	6 X 6 = 36

(20) (6)

20 + 6 = 26 (Quotient)

So, 156 ÷ 6 = 26

26 x 6 = 156 (the dividend).

1 Find the quotient in each of the following:

(Use the Area of Rectangle Model)

ⓐ 84 ÷ 6

6 X .... = ...	6 X .... = ...

6

....

....

84 ÷ 6 = ...

ⓑ 90 ÷ 4

4 X .... = ...	4 X .... = ...

4

....

....

90 ÷ 4 = ...

ⓒ 457 ÷ 3 = ...

....

....

....

ⓓ 3,200 ÷ 8 = ...

....

....

....

2 **Sarah saved 868 coins last year. She wanted to put them in 8 pots. How many coins will she put in each pot?**

(Use the Rectangle Area Model to solve, show your steps)

....

....

....

....

3 **There are 492 cars that need to use the parking lot in the stadium. The stadium includes 4 parking spaces. Each parking lot must contain the same number of cars evenly.**

How many cars are there in each parking lot?

(Use the Rectangle Area Model to solve, show your steps)

....

....

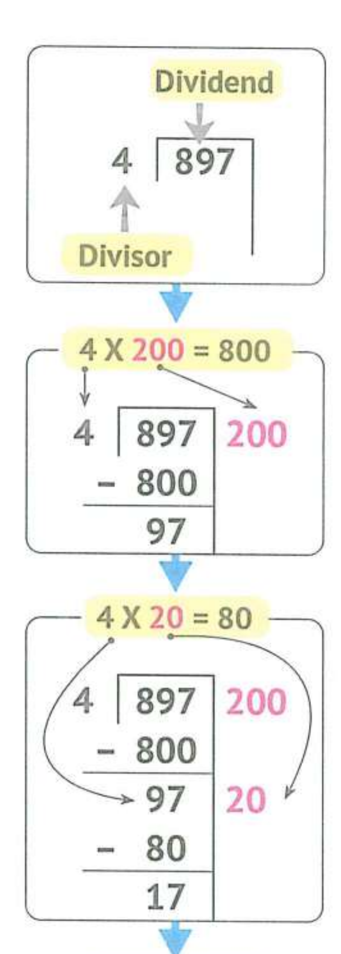
....

....

The Partial Quotients Algorithm

The Partial Quotient Algorithm:

Example (1): Divide 897 ÷ 4



1

Draw the line as shown in the figure. Then, write the dividend on the **bottom** and the **divisor** on the **left**.

2

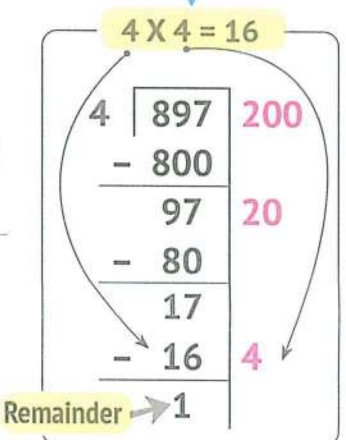
Start from the **left**, there are **8** in the Hundreds place. Notice that 800 is a multiple of 4, (4 x 200 = 800). Write **200** to the **right** of the line as shown. Then write **800 under 897**, then subtract.

3

Move to number **79** (the difference). Find the nearest multiple of 4 to 97 (4 x 20 = 80); we can use another number. Write **20** to the **right** of the line, write **80 below 97**, then subtract.

4

We move to number **17** (the difference). The nearest multiple of 4 to 17 is 16 (4 x 4 = 16). Write **4** to the **right** of the line, write **16 under 17**, then subtract.



The quotient = 200 + 20 + 4 = 224

So, 897 ÷ 4 = 224 and the remainder is 1.

Example (2): Divide:

a 87 ÷ 4

4	87	20
-	80	
	7	1
-	4	
	3	

20 + 1 = 21
Remainder 3

87 ÷ 4 = 21
and the remainder is 3

Verification:
4 x 21 = 84 ,
84 + 3 = 87

b 675 ÷ 5

5	675	100
-	500	
	175	30
-	150	
	25	5
-	25	
	0	

100 + 30 + 5 = 135

675 ÷ 5 = 135

Verification:
5 x 135 = 675

c 8,215 ÷ 3

3	8,215	2,000
-	6,000	
	2,215	700
-	2,100	
	115	30
-	90	
	25	8
-	24	
	1	

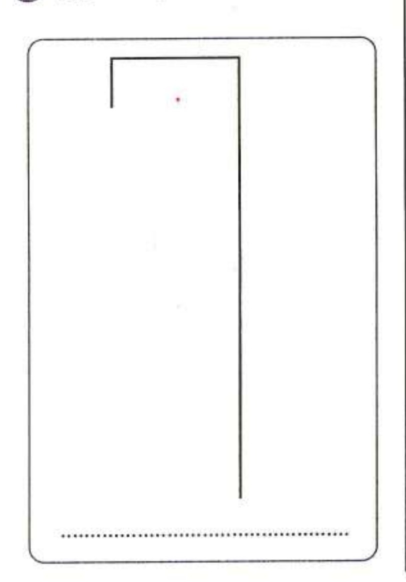
2,000 + 700 + 30 + 8
= 2,738 , Remainder 1

8,215 ÷ 3 = 2,738
and the remainder is 1

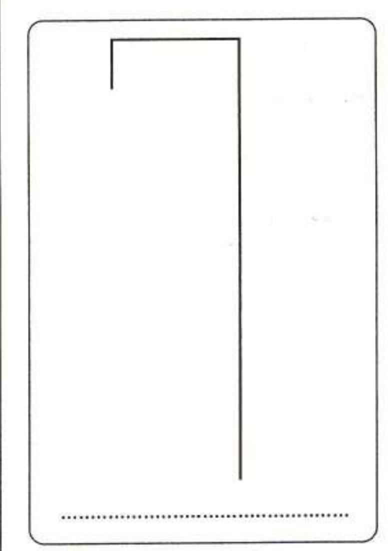
Verification:
3 x 2,738 = 8,214 ,
8,214 + 1 = 8,215

1 Use the Partial Quotient Algorithm to divide:

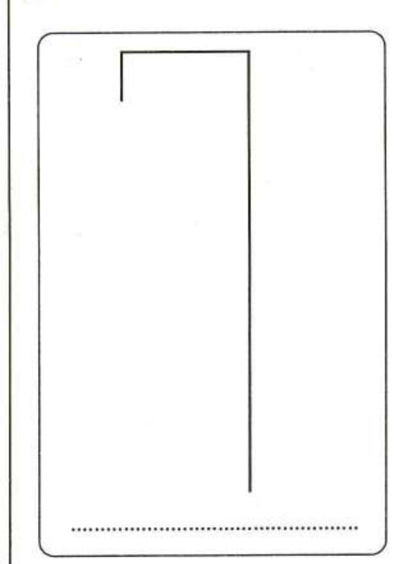
a 67 ÷ 4



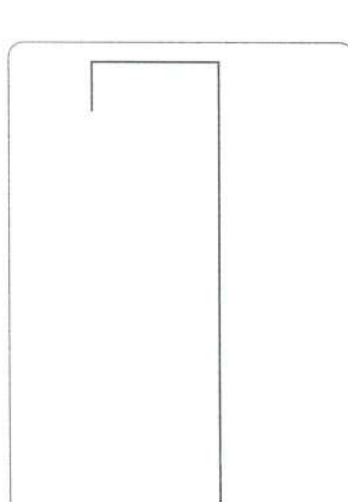
b 84 ÷ 3



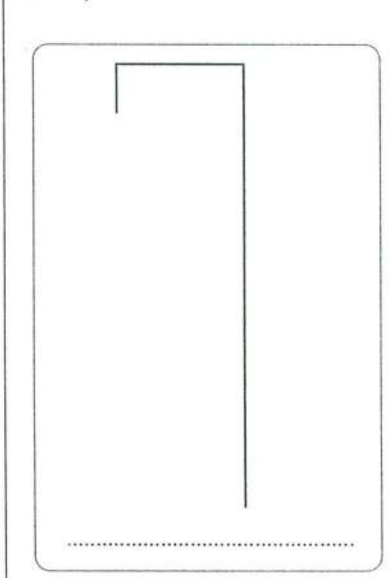
c 625 ÷ 5



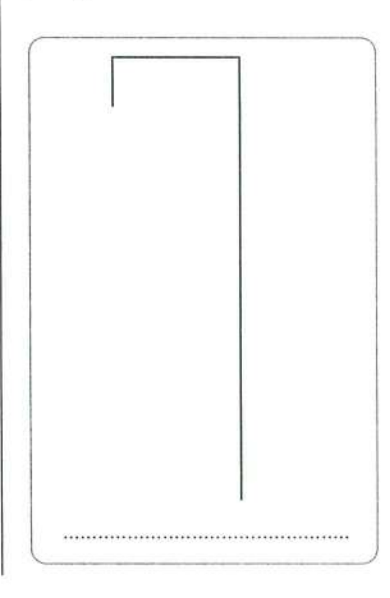
d) $937 \div 4$



e) $9{,}248 \div 4$



f) $6{,}278 \div 3$



2 A juice shop owner owns 480 cups. If the shop owner wants to use these cups for 3 months, how many cups should he use each month? (Using the Partial Quotient Algorithm)

3 One machine was used to make 1,026 cans of sugar-free soda and 5 times that number of regular soda cans over the course of 45 minutes. The regular soda cans were then placed in two shipping boxes, each containing the same number of soda cans. How many cans of regular soda are there in each shipping box?

The Standard Division Algorithm

Estimate Quotients

To estimate the quotient:

- We look for two numbers between which the **dividend** is **limited** and which are a **multiple** of the **divisor**.
- We divide each of the two numbers by the divisor, so that the result of the division is **limited** to the **quotient** of the division of the **two numbers**.

Example (1):

To estimate the quotient of 68 ÷ 4.

The number 68 is between **40** and **80.**

(Since these two numbers are multiples of 4)

40 ÷ 4 = 10 , **80 ÷ 4 = 20**

The quotient is between 10 and 20.

40 ÷ 4 =	10
68 ÷ 4 =	??
80 ÷ 4 =	20

Example (2):

To estimate the quotient of 752 ÷ 3.

The number 752 is between **600** and **900.**

(Since these two numbers are multiples of 3)

600 ÷ 3 = 200 , **900 ÷ 3 = 300**

The quotient is between 200 and 300.

600 ÷ 3 =	200
752 ÷ 3 =	??
900 ÷ 3 =	300

Example (3):

To estimate the quotient of 6,245 ÷ 2.

The number 6,245 is between **6,000** and **8,000**

(Since these two numbers are multiples of 2)

6,000 ÷ 2 = 3,000 , **8,000 ÷ 2 = 4,000**

The quotient is between 3,000 and 4,000.

6,000 ÷ 2=	3,000
6,245 ÷ 2=	??
8,000 ÷ 2=	4,000

1 Complete the following table:

	Problem	The dividend is between	The quotient is between
Ex.	45 ÷ 3	30 and 60	10 and 20
a	75 ÷ 3	.... and	.... and ....
b	845 ÷ 3	.... and	.... and ....
c	215 ÷ 4	.... and	.... and ....
d	4,256 ÷ 2	.... and	.... and ....
e	5,487 ÷ 4	.... and	.... and ....

The Standard Division Algorithm:

Example (1): Divide 98 ÷ 4:

First Step: (Writing the problem):

4 | 9 8

- The **dividend** is written **below** the line and the **divisor** is written to the **left** of the division symbol.

Second Step: (Division):

  2
4 | 9 8

- Start with the number in the place with the **highest value** (on the left). You know that 9 ÷ 4 = 2 and the remainder of the division is 1.
- Write the number 2 above the line, above number 9.
- The remainder of the division will not be recorded this time.

Third Step: (Multiplication):

  2
4 | 9 8
  8 0

- The **value** of the number 2 is 20 because it is in the **Tens** place.
- Multiply 20 x 4 = 80, then write 80 below 98.
- Since **80** is part of the **dividend** you divided.

Fourth Step: (Subtraction):

```
    2
4 | 9 8
  - 8 0
  -----
    1 8
```

Subtract:

$98 - 80 = 18$

Write the result of the subtraction.

Fifth Step: (Division):

```
    2 4
4 | 9 8
  - 8 0
  -----
    1 8
```

- The number **18** is the **new divisor**.
- $18 \div 4 = 4$ and the **remainder** is 2.
- Write 4 over 8 in the **Ones** place.

Sixth Step: (Multiplication):

```
    2 4
4 | 9 8
  - 8 0
  -----
    1 8
    1 6
```

Multiply $4 \times 4 = 16$.
Write 16 **under** 18.

Seventh Step: (Subtraction):

```
    2 4
4 | 9 8
  - 8 0
  -----
    1 8
  - 1 6
  -----
      2
```

Subtract:

$18 - 16 = 2$

So: $98 \div 4 = 24$ and the remainder is 2

From above we note that:

There are three basic steps:

(**Division** ⇒ **Multiplication** ⇒ **Subtraction**)

- These three steps are **repeated** according to the **number of digits of the dividend**.

```
            Quotient
               ↓
              2 4
Divisor → 4 | 9 8 ← Dividend
            - 8 0
            -----
              1 8
              1 6
            -----
                2 ← Remainder
```

Example (2): Divide 858 ÷ 3:

First Step: (Writing the problem):

```
3 | 858
```

Second Step: (Division)

```
    2
3 | 858
```

Third Step: (Multiplication)

```
  x 2
3 | 858
    600
```

Fourth Step: (Subtraction)

```
    2
3 | 858
  - 600
    258
```

Fifth Step: (Division)

```
    28
3 | 858
  - 600
    258
```

Sixth Step: (Multiplication)

```
  x 28
3 | 858
  - 600
    258
    240
```

Seventh Step: (Subtraction)

```
    28
3 | 858
  - 600
    258
  - 240
     18
```

Eighth Step: (Division)

```
    286
3 | 858
  - 600
    258
  - 240
     18
```

Ninth Step: (Multiplication)

```
  x 286
3 | 858
  - 600
    258
  - 240
     18
     18
```

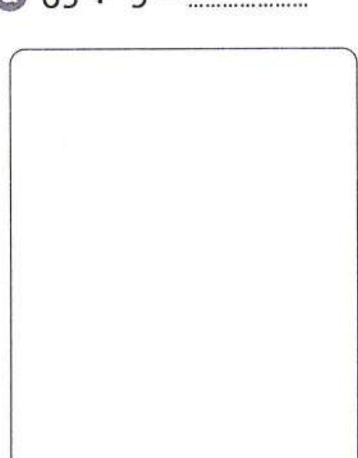
Tenth Step: (Subtraction)

```
    286
3 | 858
  - 600
    258
  - 240
     18
  -  18
      0
```

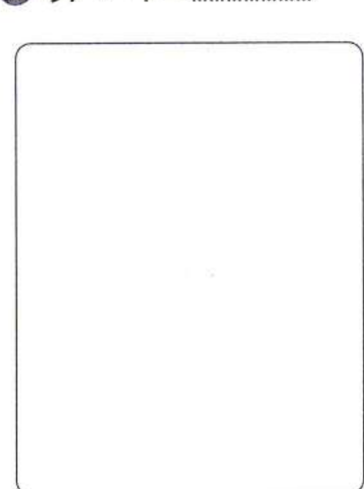
858 ÷ 3 = 286

1 Divide using the Standard Division Algorithm:

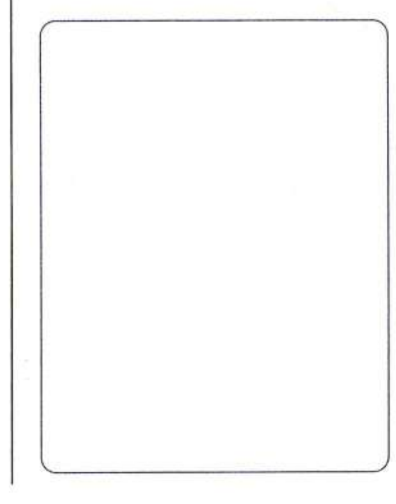
ⓐ 65 ÷ 5 = ...



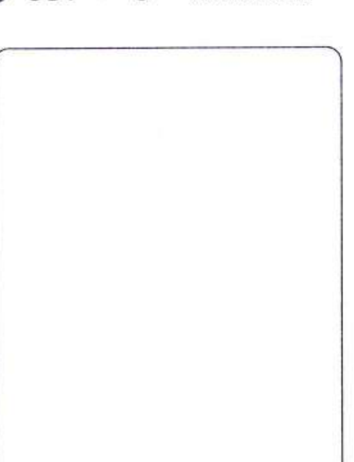
ⓑ 97 ÷ 4 = ...



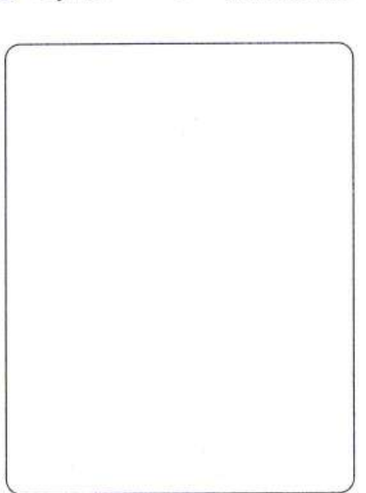
ⓒ 456 ÷ 3 = ...



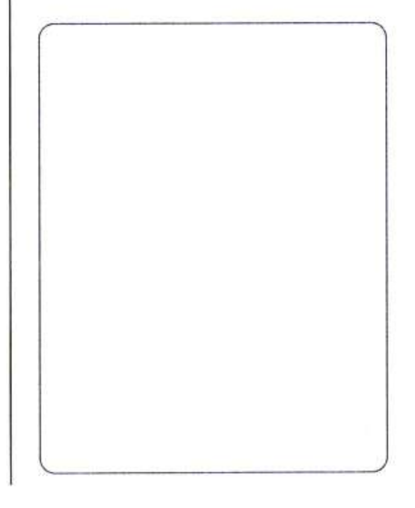
ⓓ 837 ÷ 6 = ...



ⓔ 8,457 ÷ 3 = ...



ⓕ 9,807 ÷ 3 = ...



2 The train has 784 passenger seats. If the train has 8 cars and each car has the same number of seats, how many passengers can be seated in each car?

(Solve the problem using at least two different strategies)

....

....

....

....

Division and Multiplication

Follow the Standard Division Algorithm:

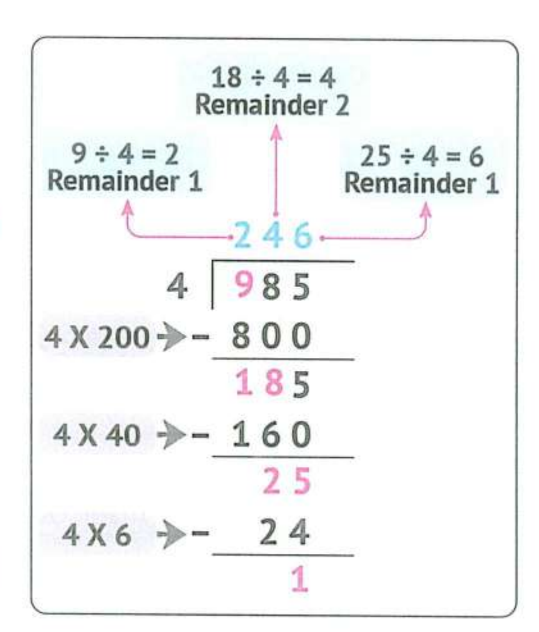
Example (1): Divide 985 ÷ 4:

(Using the Standard Division Algorithm)

The quotient will be **between** 200 and 300.

(Because the divisor is between 800 and 1,200)

- **Follow the division steps:**
  Start by writing the problem, then (divide - multiply - subtract).
- These last three steps are **repeated according** to the **dividend**.



Check 246 x 4 = 984 , 984 + 1 = 985

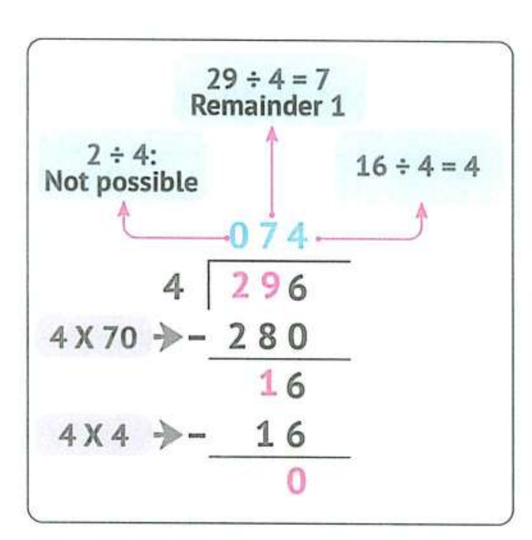
Example (2): Divide 296 ÷ 4:

(Using the Standard Division Algorithm)

The quotient will be **between** 0 and 100.

(Because the divisor is between 0 and 400)

- **Note that:** When dividing 2 ÷ 4, division is **not possible** because 2 < 4.
  So: We divide 2 and 9 together (29 ÷ 4)
- **Note that:** If the division is not possible, **we add the number that cannot be divided to the next number.**



- **Note that:** 0 is written **above** the number that cannot be divided.

Check 74 x 4 = 296

Example (3): Divide 856 ÷ 8:

(Using the Standard Division Algorithm)

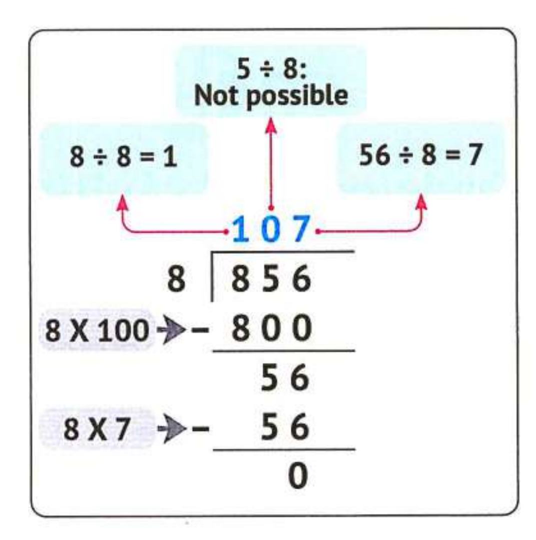
The quotient will be **between** 100 and 200.

(Because the divisor is between 800 and 1,600)

- **Note that:** When dividing 5 ÷ 8,

  division is **not possible** because 5 < 8.

  So: We divide 5 and 6 together (56 ÷ 8).



Check 107 x 8 = 856

- **Note that:** The number of digits of the **quotient** may be **equal** to or **less than** the number of digits of the **dividend**.

Example (4):

- 7,856 ÷ 5 → Number of digits of the quotient is **4** digits.

  2,364 ÷ 5 → Number of digits of the quotient is **3** digits.

  Because: 2 ÷ 5 is not possible.

---

1 Complete the following table:

	Problem	Number of Digits of Quotient	The Quotient is between	Using the Standard Division Algorithm
Ex.	452 ÷ 4	3	100 and 200	113 4 | 452 − 400 52 − 40 12 − 12 0

Ex.	278 ÷ 6	2	0 and 100	$\begin{array}{r} 046 \\ 6 \overline{)278} \\ -240 \\ \hline 38 \\ -36 \\ \hline 2 \end{array}$
a	845 ÷ 5	....	.... and	
b	396 ÷ 6	....	.... and	
c	4,256 ÷ 7	....	.... and	
d	4,824 ÷ 8	....	.... and	

2 **Estimate the quotient and determine the number of digits of the quotient, then solve each problem using the Standard Division Algorithm:**

ⓐ $576 \div 3 =$ ....

Number of digits of the quotient is ....

The quotient will be between .... and ....

ⓑ $558 \div 6 =$ ....

Number of digits of the quotient is ....

The quotient will be between .... and ....

3 **Kazem wants to travel from Cairo to Alexandria. The distance between the two cities is 219 km. Kazem plans to stop 3 times during his journey. After how many kilometers should he stop?**

....

....

....

....

Lesson 16

Solving Challenging Story Problems

Three-time Reading Strategy to Solve Word Problems:

First read → Determine what **happens** in the problem.

Second read → Determine the **values** in the problem.

Third read → Determine the **questions** that can be asked in the problem.

Example:

- Ahmed and his mother want to plant a garden, and they will buy 35 tomato seedlings, 16 carrot seedlings, and 9 beet seedlings. They want to put the seedlings in 6 rows. How many seedlings are there in each row?

To solve this problem, answer the following questions:

What happens in the problem?

There are a number of different seedlings that we want to divide into 6 rows.

What are the values in the problem?

35 tomato seedlings, **16 carrot** seedlings, **9 beet** seedlings, 6 rows.

What questions can be asked in this problem?

What is the sum of the seedlings? How many seedlings are there in each row?

Answer:

- Total seedlings = 35 + 16 + 9 = 60 seedlings.
- Number of seedlings in each row = 60 ÷ 6 = 10 seedlings.

1 In 20 weeks, Sarah collected 14 kilograms of metal cans for recycling. Salim collected 6 times what Sarah collected. The cans should be put into bags to be taken to the recycling center. Each bag holds 7 kg of cans. How many bags do they need?

What happens in the problem? ....

What are the values in the problem? ....

What questions can be asked in this problem? ....

Answer: ....

....

....

....

....

2 Hadi owns 347 small glass balls. Kamal owns 4 times as much as Hadi. Hala has 799 less than Kamal. How many glass balls does Hala have?

What happens in the problem? ....

What are the values in the problem? ....

What questions can be asked in this problem? ....

Answer: ....

....

....

....

....

3 Yahya placed 21 bottles of paint equally on 3 tables. How many bottles of paint did he put on each table?

What happens in the problem? ....

What are the values in the problem? ....

What questions can be asked in this problem? ....

Answer: ....

....

....

....

....

4 Noor read 814 pages of a book in one month. His sister read three times as many pages as Nour in the same month. How many pages did Noor and his sister read altogether?

What happens in the problem? ....

What are the values in the problem? ....

What questions can be asked in this problem? ....

Answer: ....

....

....

....

....

Unit 8
Order of Operations

Problem-Solving Strategies

Learning Objectives:

At the end of this lesson, the student will be able to:

- Apply strategies to solve addition, subtraction, multiplication, and division problems.

Which Comes First?

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use the order of operations to solve two-operation problems.

Order of Operations

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use the order of operations to solve equations that require more than one operation.

Lesson 4

The Order of Operations and Story Problems

Learning Objectives:

By the end of this lesson, the student will be able to:

- Use the order of operations to solve equations that require more than one operation.
- Write an equation and solve it to represent a multi-step word problem.

Concept 8.1 Order of Operations

Lesson 1

Problem-solving Strategies

In the second unit: You studied the strategies of **Mental Arithmetic** and strategies of **Addition and Subtraction**.

In the seventh unit: You studied the strategies of **multiplication** and **division**.

«Remember these strategies»

1 **Solve the following problems using any strategy you choose. Explain your steps:**

a) 349 + 199 = ...	b) 9,230 – 455 = ...
c) 18 X 62 = ...	d) 678 ÷ 6 = ...

2 **Estimate the solution of each problem and then use the appropriate strategy to solve:** **(Show your steps)**

ⓐ 1,892 + 3,267 = ...

Estimation: ....

ⓑ 5,612 − 56 = ...

Estimation: ....

ⓒ 127 X 6 = ...

Estimation: ....

ⓓ 1,892 ÷ 9 = ...

The quotient will be between .... and ....

3 **Solve the following problems using the Standard Algorithm:**

ⓐ
```
   24,456
 + 27,157
 ---------
 .........
```

ⓑ
```
   12,500
 +  8,215
 ---------
 .........
```

ⓒ
```
    48
 X  32
 ---------
   .......
 + .......
 ---------
 .........
```

ⓓ
```
      .......
 5 | 7 4 5
```

Lesson 2

Which Comes First?

Order of Operations Diagram

First: Problems that contain addition and subtraction only:

- When a problem contains only addition and subtraction.
- We perform operations from left to right.

Ex.1: $5 + 6 + 4$	Ex.2: $9 - 6 - 2$	Ex.3: $8 - 2 + 3$
$= 11 + 4$	$= 3 - 2$	$= 6 + 3$
$= 15$	$= 1$	$= 9$

Second: Problems that contain multiplication and division only:

- When a problem contains only multiplication and division.
- We perform operations from left to right.

Ex.1: $5 \times 2 \times 4$	Ex.2: $18 \div 2 \div 3$	Ex.3: $24 \div 8 \times 2$
$= 10 \times 4$	$= 9 \div 3$	$= 3 \times 2$
$= 40$	$= 3$	$= 6$

Third: Problems that contain two operations:

- **One of them is multiplication or division, and the other is addition or subtraction:**
  – When a problem contains more than one operation, multiplication and division must be done before addition and subtraction.

$5 + 3 \times 4$	$7 \times 2 + 4$	$9 \div 3 + 6$	$3 + 6 \div 3$
$= 5 + 12$ $= 17$	$= 14 + 4$ $= 18$	$= 3 + 6$ $= 9$	$= 3 + 2$ $= 5$
$9 - 4 \times 2$	$5 \times 3 - 7$	$8 \div 4 - 2$	$9 - 6 \div 2$
$= 9 - 8$ $= 1$	$= 15 - 7$ $= 8$	$= 2 - 2$ $= 0$	$= 9 - 3$ $= 6$

1 **Follow the order of calculations to solve the following problems:**

a) $12 + 2 + 8$ = ... = ...	b) $12 - 5 - 2$ = ... = ...	c) $9 + 8 - 2$ = ... = ...
d) $12 - 2 + 5$ = ... = ...	e) $24 \div 6 \div 4$ = ... = ...	f) $5 \times 6 \times 3$ = ... = ...
g) $9 \times 4 \div 6$ = ... = ...	h) $24 \div 8 \times 4$ = ... = ...	i) $5 \times 4 + 3$ = ... = ...

j) $32 \div 8 + 5$ = ... = ...	k) $5 + 20 \div 4$ = ... = ...	l) $6 + 6 \times 2$ = ... = ...
m) $16 \div 2 - 7$ = ... = ...	n) $16 - 8 \div 4$ = ... = ...	o) $8 - 2 \times 3$ = ... = ...
p) $2 \times 8 - 6$ = ... = ...	q) $6 + 5 - 3 - 2$ = ... = ...	r) $6 \times 5 \div 3 \div 2$ = ... = ...

♦ **Solve the picture puzzles using the correct order of operations:**

Example (1): If 📖 + 📖 + 📖 = 15

– Three equal shapes whose sum is (15). **So:** 📖 = 15 ÷ 3 = 5

Example (2): If ✉ X ✉ X ✉ = 27

– 27 = 3 X 3 X 3. **So:** ✉ = 27

Example (3): Solve the following puzzle. When you know the number each picture represents, write the value above the picture. Remember the order of operations.

😄😄 + 😄😄 + 😄😄 = 36

❤ + ❤ x 😄 = 28

❤ x 👍 + ❤ = 44

❤❤ + 👍 x 😄 = ...

- **To solve the previous puzzle, we must first look for the key to this puzzle:**

The first line: 😄😄 + 😄😄 + 😄😄 = 36

- Three equal shapes whose sum is (36), by dividing 36 ÷ 3 = 12.
- This means that the figure = 12 and that: 😄 = 6

The second line: ❤️ + ❤️ x 😄 = 28

- Put the number 6 in the place of the figure 😄 → ❤️ + ❤️ X 6 = 28
- By doing multiplication first and then adding:

❤️ + ❤️ + ❤️ + ❤️ + ❤️ + ❤️ + ❤️ = 28

- This means: 7 X ❤️ = 28 ⇒ ❤️ = 4

The third line: ❤️ x 👍 + ❤️ = 44

- Put the number 4 in the place of the figure ❤️ → 4 X 👍 + 4 = 44
- **And this line can be written as follows:** 4 X 👍 + 4 = 40 + 4
- **This means:** 4 X 👍 = 40

So: 👍 = 10

The fourth line: ❤️❤️ + 👍 x 😄 = ...

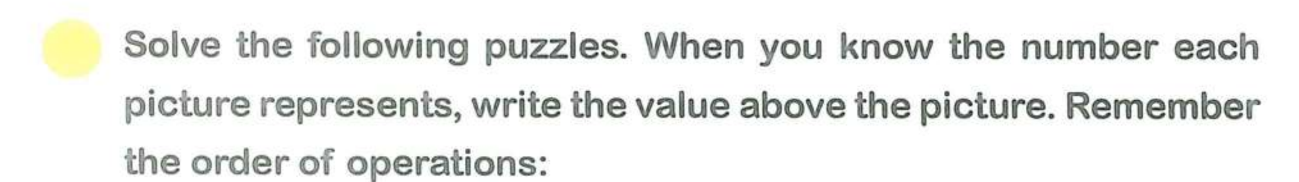
- Put the number 6 in the place of the figure 😄.
- Put the number 4 in the place of the figure ❤️.
- Put the number 10 in the place of the figure 👍.

❤️❤️ + 👍 x 😄 = **4 X 2 + 10 X 6**

= **8 + 60 = 68**

Note

❤️❤️ = ❤️ + ❤️ and 😄😄 = 😄 + 😄



Solve the following puzzles. When you know the number each picture represents, write the value above the picture. Remember the order of operations:

a

[rectangle] + [rectangle] + [rectangle] = 12

[triangle] + [rectangle] + [rectangle] = 18

[triangle] + [triangle] + [circle] = 26

[rectangle] x [circle] + [triangle] = ...

[triangle] = ..., [circle] = ..., [rectangle] = ...

....

....

....

....

b

[eye] + [eye] + [eye] = 18

[eye] + [ankh] + [eye] = 23

[ankh] + [pyramid] + [pyramid] = 17

[pyramids] x [eye] + [ankh ankh] = ...

[eye] = ... , [pyramid] = ... , [ankh] = ...

....

....

....

....

c

[sun] + [sun] + [sun] = 27

[sun] + [sun] + [drops] = 22

[drops] + [drops] + [cloud] = 18

[drops] x [clouds] + [suns] = ...

[drops] = ..., [sun] = ..., [cloud] = ...

....

....

....

....

d

[trapezoid] + [trapezoid] + [trapezoid] = 12

[pentagon] + [trapezoid] x [pentagon] = 18

[pentagon] + [pentagon] x [ring] = 28

[pentagons] + [ring] x [trapezoids] = ...

[pentagon] = ..., [ring] = ..., [trapezoid] = ...

....

....

....

....

Order of Operations

Order of Operations Diagram

Parentheses → Exponents → Multiplication and Division (From left to right) → Addition and Subtraction (From left to right)

◆ Problems with more than one operation:

- **If the problem contains more than one operation:**

  Multiplication and division must be done **before** addition and subtraction.
  Then add and subtract from **left** to **right**.

Ex.1: $30 \div 5 + 4 \times 7 + 2 \times 6$	Ex.2: $3 \times 4 \times 5 + 40 \div 4 \div 2$
$= 6 + 28 + 12$	$= 12 \times 5 + 10 \div 2$
$= 34 + 12$	$= 60 + 5$
$= 46$	$= 65$

Follow the order of calculations to solve the problems:

ⓐ $2 + 4 \times 6$ = ... = ...	ⓑ $48 \div 4 + 9$ = ... = ...	ⓒ $6 \times 3 - 3 \times 5$ = ... = ...
ⓓ $7 + 70 \div 10 - 2$ = ... = ...	ⓔ $49 - 7 \times 6 + 4$ = ... = ...	ⓕ $8 \times 2 + 24 - 12$ = ... = ...
ⓖ $8 \times 3 + 6 \div 2$ = ... = ...	ⓗ $21 \div 3 - 2 \times 3$ = ... = ...	ⓘ $25 \div 5 + 30 \div 3$ = ... = ...

The Order of Operations and Story Problems

Order of Operations Diagram

Parentheses → Exponents → Multiplication and Division (From left to right) → Addition and Subtraction (From left to right)

◆ Using numbers and symbols to represent what happens in each problem and then solve it (remember the order of operations):

1. Adel loves chocolate. He received 246 bars of chocolate for his birthday. He ate 24 bars of chocolate and wants to give the rest to 6 of his friends. How many bars of chocolate would each friend have if they divided them equally?

....

....

....

....

....

2. Maha walked 14 kilometers every day for two weeks.
The following week, Maha walked 56 kilometers.
How many kilometers did she walk during those three weeks?

....

....

....

....

....

3. Ashraf must take the bus to go to work. It takes 27 minutes to reach the bus stop near his works place. After that, he has to walk for 12 minutes from the bus stop to his workplace. How many minutes does Ashraf spend on his way to work 5 days a week?

....

....

....

4. A group of tourists is on a tour in Alexandria. The group includes 172 tourists and 8 tour guides who want to travel to visit the pyramids by microbus. Each microbus can accommodate 9 persons. How many microbuses do they need so that everyone can reach the pyramids?

....

....

....

5. Nashwa wants to bake blueberry pancakes. She will put 6 berries in each pancake. Nashwa bought 198 berries from the store. On her way home, Nashwa ate 18 berries. How many pancakes can Neshwa bake with the remaining berries?

....

....

....

....

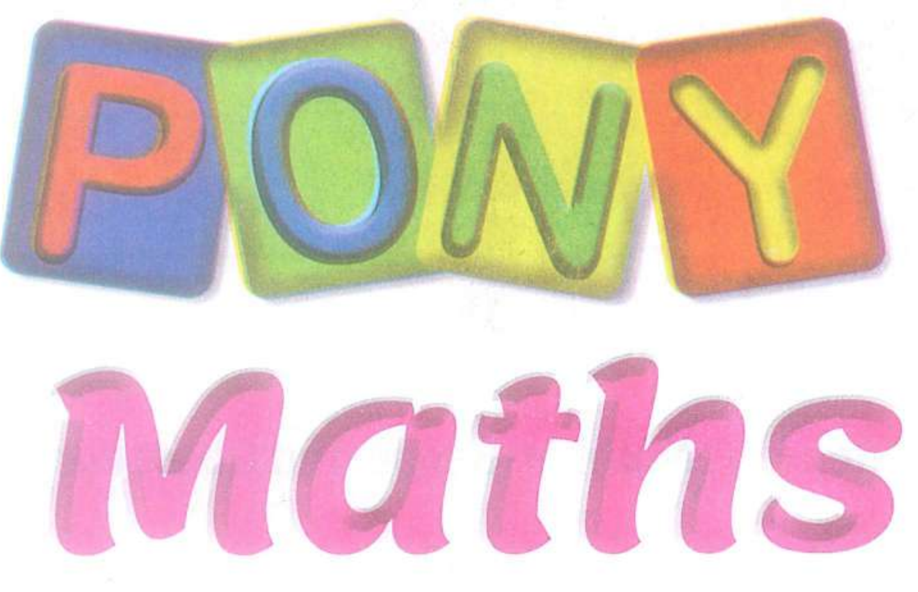
6. Write a word problem that can be represented by the equation: $6 + 36 \div 4$.

....

....

....

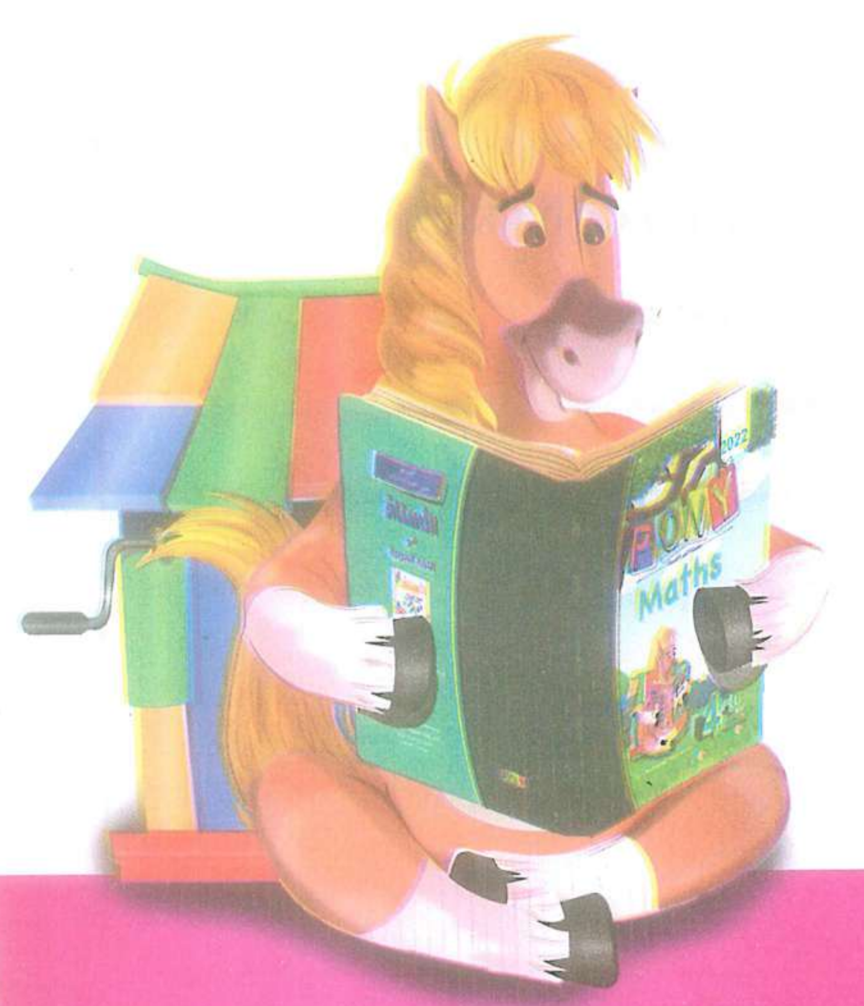
....



Maths

By: Mohamed Nasreldin

Exercises Book



4th

Primary
First Term

2022

Theme 1 Number Sense and Operations

Unit 1 Place Value

Concept 1.1 Reinforcing Place Value

Exercises on Lessons 1&2

Digit, Numeral and Number & Really Big Numbers!

1 Complete the following table by putting a tick (✓) as shown in the example.

		Digit	Number	Numeral
Ex.	25	....	✓	✓
a	8	....	....	....
b	125	....	....	....
c	Eight	....	....	....
d	Two hundred fifteen	....	....	....
e	3	....	....	....
f	45	....	....	....
g	200 + 5	....	....	....

2 Write the greatest and the smallest numbers that can be formed from the following digits.

a (6 , 8 , 7 , 2 , 9) – The **greatest** number is: ....
– The **smallest** number is: ....

b (2 , 0 , 8 , 3 , 4) – The **greatest** number is: ....
– The **smallest** number is: ....

c (5 , 1 , 9 , 3 , 4) – The **greatest** number is: ....
– The **smallest** number is: ....

ⓓ (8 , 0 , 2 , 7 , 5) – The **greatest** number is: ....

– The **smallest** number is: ....

3 Complete the following table (Write the place value and the value of the digit 8 in each number):

	Number	Place Value	Value
ⓐ	422,485	....	....
ⓑ	38,250	....	....
ⓒ	83,115	....	....
ⓓ	700,810	....	....
ⓔ	415,128	....	....
ⓕ	820,200	....	....
ⓖ	210,682	....	....

4 Complete using (< , = or >):

ⓐ 452,252 542,252

ⓑ 25,225 25,252

ⓒ 60,606 600,060

ⓓ 10,000 9,999

ⓔ 20,850 20,850

ⓕ 900,900 99,999

5 Use the following Place Value table to read the shown number:

ⓐ

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
			8	1	0	4	2	8	8
	.... Millions			.... Thousands			....		

– The previous number is read as: ....

....

(b)

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
		4	3	1	8	0	0	0	5
	.... Millions			.... Thousands			....		

– The previous number is read as: ....

....

(c)

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
	5	1	8	1	2	9	2	0	8
	.... Millions			.... Thousands			....		

– The previous number is read as: ....

....

(d)

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
5	0	0	2	4	0	3	7	5	0
....	.... Millions			.... Thousands			....		

– The previous number is read as: ....

....

(e)

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
7	3	6	5	4	2	9	9	6	8
....	.... Millions			.... Thousands			....		

– The previous number is read as: ....

....

6 Write the following numbers in digits: (Standard Form):

a) 25 Millions + 250 Thousands + 200 = ...

b) 120 Millions + 25 Thousands + 12 = ...

c) 300 Millions + 5 thousands + 3 = ...

d) 600 Millions + 200 Thousands + 3 = ...

e) 5 Billions + 6 Millions + 4 Thousands + 4 = ...

f) 9 Billions + 25 Millions + 125 Thousands + 225 = ...

7 Complete the following numbers:

a) 456,254 = ... Thousands + ...

b) 7,024,258 = ... Millions + ... Thousands + ...

c) 14,105 = ... Thousands + ...

d) 9,005,002= .... Millions + ... Thousands + ...

e) 23,015 = ... Thousands + ...

f) 7,000,021 = ... Millions + ... Thousands + ...

8 Complete the following table:

	Number	The Place in Which the Number 4 is Located
a	227,102,245	....
b	13,247,258	....
c	4,127,578	....
d	225,124	....
e	2,415,220	....
f	6,125,200,482	....
g	248,367,250	....
h	4,000,000,525	....

i	5,400,300,200	....
j	24,100,000	....

9 Circle the number in the place shown in front of it:

	Number	The Place in Which the Number is Located
a	528,745,432	Ones
b	789,654,026	Hundreds
c	427,167,523	Thousands
d	210,347,163	Millions
e	793,400,063	Ten-thousands
f	7,463,814,325	Billions
g	9,521,005,136	Hundred-millions
h	8,852,963,852	Ten-millions
i	520,753,159	Hundred-thousands
j	8,201,093	Ten

10 Complete the following:

a) The **largest** 5-digit-number is ....

b) The **smallest** 4-digit-number is ....

c) The **largest** 6-different-digit-number is ....

d) The **smallest** 6-different-digit-number is ....

e) The value of the digit 6 in the number 12**6**,251 is ....

f) The value of the digit 3 in the number **3**2,105 is ....

g) The place value of the digit 0 in the number 12**0**,213 is ....

h) The place value of the digit 4 in the number 10,21**4** is ....

(i) The **largest** number that can be formed from the digits: (5, 6, 3, 8, 2) is

....

(j) The **smallest** number that can be formed from the digits: (5, 0, 7, 3, 1) is

....

(k) The **largest** 5-digit-number that can be formed from the digits: (3, 7, 2)

is ....

(l) The **smallest** 6-digit-number that can be formed from the digits: (6, 8, 4)

is ....

(m) 450 Millions + 50 Thousands = ...

(n) 25 Millions + 20 = ...

(o) 40,002,200 = ... Thousands + ... Millions + ...

(p) 7,458,115,251 = ... Billions + ... Millions +

.... Thousands + ...

(q) The number 77,002,205 is read as: ....

(r) The number "Three hundred five million, fourteen thousand, seven" is

written as: .... **(Standard Form)**

(s) The digit 3 in the number **3**6,154,258 is in the .... place.

(t) The digit 8 in the number 45,1**8**5,252 is in the .... place.

(u) The digit .... in the number 7,335,102,562 is in the Billions

place.

(v) The digit .... in the number 922,157,528 is in the

Hundred-millions place.

11 Choose the correct answer from the brackets:

ⓐ The .... is an amount related to the numeral and consists of one or more digits.

(number or digit or numerical form)

ⓑ The .... is writing the number in any way.

(number or digit or numerical form)

ⓒ .... represents a digit. (15 or 9 or Eight)

ⓓ .... represents a number. (Two hundred fifty or 200 + 5 or 29)

ⓔ The **largest** 4-digit-number is ....

(9,999 or 9,000 or 1,000)

ⓕ The **smallest** 5-digit-number is ....

(99,999 or 10,000 or 10,234)

ⓖ The **largest** 5-different-digit-number is ....

(98,765 or 10,234 or 10,000)

ⓗ The **smallest** 4-different-digit-number is ....

(9,876 or 1,023 or 1,000)

ⓘ The value of the digit 7 in the number 125,35**7** is ....

(7 or 70 or 700)

ⓙ The value of the digit 0 in the number 87,**0**51 is ....

(0 or 10 or 100)

ⓚ The place value of the digit 8 in the number 15,3**8**2 is ....

(Ones or Tens or Hundreds)

ⓛ The place value of the digit 7 in the number **7**25,145 is ....

(Thousands or Ten-thousands or Hundred-thousands)

ⓜ The largest number that can be formed from the digits: (8, 6, 1, 7, 9) is

.... (98,761 or 16,789 or 97,168)

ⓝ The **smallest** number that can be formed from digits: (0, 8, 1, 4, 5) is

.... (85,510 or 10,458 or 85,410)

ⓞ The **largest** 6-digit-number that can be formed from the digits: (9, 1, 7)

is .... (971,971 or 999,971 or 111,179)

ⓟ The smallest 5-digit-number that can be formed from the digits (8, 2, 6) is .... (22,268 or 88,862 or 20,068)

ⓠ 12 Millions + 15 Thousands + 20 = ...

(20,015,012 or 121,520 or 12,015,020)

ⓡ 5 Billions + 3 Millions + 45 Thousands + 9 = ...

(5,003,045,009 or 5,003,045,090 or 5,300, 450,900)

ⓢ 3,400,003,025 = ...

(3 Billions + 400 Millions + 300 Thousands + 25 or 3 Billions + 4 Millions + 3 Thousands + 25 or 3 Billions + 400 Millions + 3 Thousands + 25)

ⓣ Four billion, six hundred five million, ninety thousand, fifteen

= .... (4,065,090,015 or 4,650,900,015 or 4,605,090,015)

ⓤ Six billion, five hundred thousand, thirty = ...

(6,000,500,030 or 6,500,000,030 or 6,500,000,300)

ⓥ The digit 8 in the number 214,2**8**4,697 is in the .... place.

(Tens or Ten-thousands or Ten-millions)

ⓦ The digit .... in the number 745,215,369 is in the Hundred-thousands place. (3 or 2 or 7)

Worksheet 1

1 Complete the following:

ⓐ The number that represents the numeral "three hundred and seventeen" is ....

ⓑ The value of the digit 3 in the number 234,542,124 is ....

ⓒ The **largest** 6-digit-number is ....

ⓓ The billion is the **smallest** number formed from .... digits

ⓔ All digits are .... and all numbers are not ....

2 Choose the correct answer from the brackets:

ⓐ "8" represents ....

(digit only or digit and number only or digit, number and numeral)

ⓑ The place value of the digit 0 in the number 30,745 is ....

(Thousands or Ten-thousands or Zero)

ⓒ The **smallest** 5-different-digit-number is ....

(10,000 or 90,000 or 10,234)

ⓓ The **largest** number that can be formed from the digits: (2, 7, 1, 0, 3) is ....

(70,321 or 73,210 or 10,237)

ⓔ 500 + 0 + 25 = ...

(500,025 or 5,025 or 525)

3 Complete using (< , = or >):

ⓐ 54,205 ☐ 45,250

ⓑ 25,000 ☐ 200,005

ⓒ 808,080 ☐ 80,808

ⓓ 100,000 ☐ One hundred thousand

4 Arrange the following numbers in an ascending order:

100,100 , 99,999 , 990,000 , 10,000

The order: .... , ... , ... , ...

Exercises on Lessons 3&4

Changing Values & Comparing Values

1 Complete the following table, write the value and the place value of the underlined digit of the following numbers:

	Number	Place Value	Value
a	7,654,328,638		
b	9,654,104,103		
c	6,123,689,456		
d	5,000,412,698		
e	7,021,842,036		
f	7,002,852,369		
g	9,852,147,633		
h	700,520,069		
i	405,039,506		
j	500,700,021		

2 Complete the following table:

	Digit	Place Value	Value
a	8	Ones	
b	6	Hundreds	
c	9		9,000

d	3	....	300,000
e	7	Ten-millions	....
f	2	Billions	....
g	4	....	40
h	5	....	50,000
i	1	Millions	....
j	6	....	600,000,000

3 Complete the following:

a) 30 Tens = ...

b) 50 Ten-thousands = ...

c) 20 Ten-millions = ...

d) 600 Ones = ...

e) 700 Hundreds = ...

f) 200 Hundred-thousands = ...

g) 90 Millions = ...

h) 100 Thousands = ...

i) 5,000 = ... Hundreds.

j) 10,000 = ... Thousands.

k) 800,000 = ... Ten-thousands.

l) 90,000 = ... Tens.

m) 1,000,000,000 = ... Millions.

4 Complete the following:

a) 500 Tens = ... Thousands.

b) 600 Thousands = ... Tens.

c) 60 Ten-millions = ... Hundreds.

d) 1,000 Hundreds = ... Thousands.

e) 3,000 Hundred-thousands = ... Millions.

f) 9,000 Millions = ... Billions.

g) 100 Thousands = ... Ten-thousands.

5 Complete the following:

ⓐ The place where the digit 8 is in a value **10 times** the digit 8 in the Ten-thousands place is ....

ⓑ The place where the digit 7 is in a value **100 times** the digit 7 in the Ten-thousands place is ....

ⓒ The place where the digit 3 is in a value **1,000 times** the digit 3 in the Tens place is ....

ⓓ The place where the digit 6 is in a value **10 times** the digit 6 in the Millions place is ....

ⓔ The value of the digit in the **Ones** place is .... times the value of the digit in the Hundreds place.

ⓕ The value of the digit in the **Hundred-thousands** place is .... times the value of the digit in the Tens place.

ⓖ The value of the digit in the **Millions** place is .... times the value of the digit in the Thousands place.

ⓗ The value of the digit in the **Billions** place is .... times the value of the digit in the Millions place.

6 Complete the following:

ⓐ (8 Tens , 7 Ones) X 10 = ...

ⓑ (6 Hundreds, 3 Ones) X 100 = ...

ⓒ (3 Hundreds, 5 Tens) X 10 = ...

ⓓ (7 Thousands, 2 Tens) X 100 = ...

ⓔ (6 Thousands, 2 Hundreds) X 1,000 = ...

ⓕ (4 Millions, 7 Hundreds) X 100 = ...

ⓖ (9 Hundreds, 5 Tens, 3 Ones) X 10 = ...

ⓗ (9 Thousands, 7 Hundreds, 2 Ones) X 100 = ...

(i) (9 Hundreds , 5 Tens , 3 Ones) X 10 = ...

(j) (9 Hundred-thousands , 5 Ones) X 10 = ...

(k) 8 Hundreds X 100 = ...

(l) 15 Thousands X 1,000 = ...

(m) 100 Millions X 10 = ...

7 Complete the following:

(a) The greatest and the smallest 7-digit-numbers are:

The **greatest** number is ....

The **smallest** number is ....

(b) The greatest and the smallest 8-digit-numbers are:

The **greatest** number is ....

The **smallest** number is ....

(c) The greatest and the smallest 9-digit-numbers are:

The **greatest** number is ....

The **smallest** number is ....

(d) The greatest and the smallest 10-digit-numbers are:

The **greatest** number is ....

The **smallest** number is ....

(e) The greatest and the smallest 7-different-digit-numbers are:

The **greatest** number is ....

The **smallest** number is ....

(f) The greatest and the smallest 8-same-digit-numbers are:

The **greatest** number is ....

The **smallest** number is ....

(g) The greatest and the smallest 9-different-digit-numbers are:

The **greatest** number is ....

The **smallest** number is ....

(h) The greatest and the smallest numbers formed from the digits:

(8 , 6 , 7 , 2 , 0 , 3 , 4) are:

The **greatest** number is ....

The **smallest** number is ....

(i) The greatest and the smallest numbers formed from the digits:

(9 , 5 , 6 , 8 , 2 , 4) are:

The **greatest** number is ....

The **smallest** number is ....

(j) The greatest and the smallest 8-digit-numbers formed from the digits:

(9 , 2 , 4) are:

The **greatest** number is ....

The **smallest** number is ....

(k) The greatest and the smallest 8-even-digit-numbers are:

The **greatest** number is ....

The **smallest** number is ....

(l) The greatest and the smallest 8-odd-digit-numbers are:

The **greatest** number is ....

The **smallest** number is ....

8 Choose the correct answer from the brackets:

(a) The value of the digit 8 in the number 36,**8**15,250 is ....

(80,000 or 800,000 or 8,000,000)

(b) The place value of the digit 7 in the number 33,128,2**7**5 is ....

(Tens or Ten-thousands or Hundred-thousands)

(c) The value of the digit 6 in the Ten-thousands place is ....

(6,000 or 60,000 or 600,000)

(d) The value of the digit 3 in the Hundred-millions place is ....
(300 or 300,000 or 300,000,000)

(e) 60 Hundred-thousands = ... (60,000 or 600,000 or 6,000,000)

(f) 800 Thousands = ... Hundreds. (8,000 or 800 or 80)

(g) 4 Billions = ... Ten thousands. (4,000 or 40,000 or 400,000)

(h) 4,000 = ... Hundreds. (4 or 40 or 400)

(i) 60,000 = ... Thousands. (6 or 60 or 600)

(j) 200 Millions = ... (200 or 200,000 or 200,000,000)

(k) 500 Tens = ... (5,000 or 50,000 or 500,000)

(l) 1 Billion = ... Millions. (10,000 or 1,000 or 1,000,000)

(m) The value of the digit in the Ten-thousands place is **100 times** the value of the digit in the .... place. (Tens or Hundreds or Thousands)

(n) The value of the digit in the .... place is **10 times** the value of the digit in the Hundreds place.
(Thousands or Ten-thousands or Hundred-thousands)

(o) (7 Tens, 3 Ones) X 100 = ... (7,300 or 73,000 or 730,000)

(p) (3 Hundreds, 2 Tens) X 1,000 = ...
(32,000 or 320,000 or 3,200,000)

(q) 15 Millions X 100 = ...
(1,500,000 or 15,000,000 or 1,500,000,000)

(r) The value of the digit 3 in the number 9,237,468,258 is ....
(3,000,000,000 or 300,000,000 or 30,000,000)

(s) The **smallest** number formed from the digits: (5 , 6 , 7 , 2 , 0 , 8) is
.... (876,250 or 205,678 or 678,205)

(t) The number 200,000 = ... times the number 200.
(100 or 1,000 or 10,000)

Worksheet 2

1 Choose the correct answer from the brackets:

(a) The **smallest** number formed from the digits: (5, 3, 7, 2, 0, 4) is .... (754,302 or 754,320 or 203,457)

(b) The number 60,000 = ... times the number 600. (100 or 1,000 or 10,000)

(c) The **largest** 7-similar-digits-number is .... (9,999,999 or 1,111,111 or 9,876,543)

(d) 25 Thousands x 1,000 = ... (25,000,000 or 25,000 or 250,000)

(e) The place value of the digit 7 in the number 251,475,253 is .... (Tens or Ten-thousands or Ten-millions)

2 Complete the following:

(a) (4 Hundreds and 5 Tens) x 100 = ...

(b) The **largest** even number formed from 8 digits is ....

(c) The value of the digit in the Millions place is equal to .... times the number in the Thousands place

(d) 400 Thousands = ...

(e) 800,000 = ... Ten-thousands.

3 Match:

1 1,000,000	(a) The value of the digit 5 in Billions place.
2 9,876,543	(b) The smallest 7-digit-number.
3 5,000,000,000	(c) 30 Ten-thousands.
4 2,500,000,000	(d) The greatest 7-different-digit-number.
5 300,000	(e) 25 Millions X 100

Exercises on Lessons 5&6

Many Ways to Write & Composing and Decomposing

1 Write the following numbers in the **Word Form**:

ⓐ 7,200,150,208: ....

....

....

ⓑ 400,300,200: ....

....

....

ⓒ 1,500,000: ....

....

....

ⓓ 20,050,003: ....

....

....

ⓔ 4,000,000,000 + 6,000,000 + 20,000 + 300 + 20 + 6: ....

....

....

ⓕ 2,000,000,000 + 30,000,000 + 700,000 + 600: ....

....

....

ⓖ 200,000,000 + 700,000: ....

....

....

2 Write the following numbers in the Standard Form:

- a) Five hundred million, twenty thousand, fifty: ....
- b) Four billion, seven million, five thousand, nine: ....
- c) Eighteen million, ninety thousand: ....
- d) One billion, five hundred twenty thousand, forty : ....
- e) 8,000,000,000 + 50,000,000 + 60,000 + 300 + 7 = ...
- f) 9,000,000,000 + 800,000 + 300 = ...
- g) 9,000,000,000 + 30,000,000 + 60,000 + 20 = ...
- h) 3,000,000,000 + 300,000 = ...

3 Write the Expanded Form of the following numbers:

- a) 400,120,603 = ... + ... + ... + ... + ...
- b) 5,200,090,050 = ...
- c) 20,750,600 = ...
- d) 250,000,524 = ...
- e) Six billion, eight hundred fifteen million, four hundred thousand, thirty =

  ....

  ....
- f) Nine billion, thirty-five million, nine hundred five thousand, three hundred six = ...

  ....
- g) One hundred ninety million, six hundred twenty-four thousand, seventeen = ...

  ....
- h) Sixty-three million, five hundred ninety-seven =

  ....

  ....

4 Complete the following table:

	Standard Form	Word Form	Expanded Form
a	4,080,107,250	....	....
b	4,000,125,695	....	....
c	....	Three hundred fifty million, nine hundred five thousand, two hundred fifty five	....
d	....	Three billion, six hundred million, seventy thousand, fifteen	....
e	....	....	700,000,000 + 50,000 + 4,000 + 300 + 20 + 5
f	....	....	7,000,000,000 + 200,000,000 + 4,000,000 + 30,000 + 200 + 90 + 3

5 Complete the following table:

	Composing Numbers (Expanded Form)	Decomposing Numbers (Expanded Notation)
a	300,250,102	(3 X ....) + (2 X ....) + (5 X ....) + (1 X ....) + (2 X ....)
b	7,050,000,865	....
c	3,006,080,500	....
d	....	(2 X 1,000,000,000) + (9 X 10,000,000) (8 X 100,000) + (7 X 1,000) + (3 X 100) + (7 X 10) + (1 X 6)
e	....	(3 X 1,000,000,000) + (6 X 100,000,000) + (5 X 10,000) + (3 X 1,000) + (8 X 10)
f	....	(2 X 100,000,000) + (5 X 10,000,000) (6 X 1,000,000) + (9 X 1,000) + (4 X 100) + (8 x 10) + (3 X 1)

6 Use the **Place Value** table to help you write the following numbers in different forms:

ⓐ

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
8	0	0	7	2	0	6	0	5	9

(1) Standard Form: ....

(2) Word Form: ....

....

(3) Expanded Form: ....

....

(4) Expanded Notation: ....

....

ⓑ

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
	9	2	0	7	0	2	8	0	0

(1) Standard Form: ....

(2) Word Form: ....

....

(3) Expanded Form: ....

....

(4) Expanded Notation: ....

....

ⓒ

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
		3	9	8	0	0	2	0	2

(1) Standard Form: ....

(2) Word Form: ....

....

(3) Expanded Form: ....

....

(4) Expanded Notation: ....

....

ⓓ

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
			2	8	9	0	1	0	5

(1) Standard Form: ....

(2) Word Form: ....

....

(3) Expanded Form: ....

....

(4) Expanded Notation: ....

....

7 Choose the correct answer:

ⓐ The number 35,200,810 (in the **Word Form**) is ....

(thirty-five thousand two hundred eighty-one or thirty-five million, two hundred thousand, eight hundred ten or three hundred fifty two million, eight hundred ten)

ⓑ 800,000,000 + 7,000,000 + 50,000 + 300 + 2 = ...

(in the Word Form) (807,050,302 or Eight hundred and seven million, five hundred thousand, three hundred two or Eight hundred seventy million, fifty thousand, three hundred two)

ⓒ Six hundred and fifty million, thirteen thousand, five hundred twenty-six **(in Standard Form):** ....(605,130,516 or 605,013,516 or 650,013,526)

ⓓ 7,000,000,000 + 400,000,000 + 2,000 + 30 = ...

(in Standard Form) (740,002,030 or 7,400,002,030 or 740,002,030)

ⓔ 150,000,230 : .... **(in Expanded Form)**

(100,000,000 + 5,000,000 + 200 + 30 or 10,000,000 + 50,000,000 + 200 + 30 or 100,000,000 + 50,000,000 + 200 + 30)

ⓕ 8,000,000,000 + 20,000,000 + 800,000 + 2,000 + 80 = ...

(8,280,280 or 8,020,802,080 or 80,280,080)

ⓖ (6 X 1,000,000,000) + (6 X 10,000,000) + (6 X 10,000) + (6 X 100) + (6 X 10) = ... (6,060,060,660 or 660,060,660 or 6,660,000,660)

ⓗ 3,000,000,000 + 50,000,000 + 12,000 + 245 = ...

(3,512,245 or 3,512,000,245 or 3,050,012,245)

ⓘ 5,000,000,000 + 500,000,000 + 50,000 + 500 = ...

(5,000,550,500 or 5,500,050,500 or 5,550,000,500)

ⓙ Three hundred five million, seven hundred thousand, sixteen =

.... (350,700,016 or 305,700,160 or 305,700,016)

ⓚ Five billion, six million, nine thousand, seven = ...

(5,006,009,007 or 5,060,090,070 or 5,600,900,700)

ⓛ (3 X 100,000,000) + (3 X 10,000,000) + (3 X 100,000) + (3 X 10,000) + (3 X 100) + (3 X 10) = ...

(33 million , 33 thousand , 33 or 303 million , 303 thousand , 303 or 330 million , 330 thousand , 330)

Worksheet 3

1 Choose the correct answer from the brackets:

ⓐ The number 350,000,350: .... **(in Word Form)**

(Three hundred fifty thousand, three hundred fifty or Thirty-five million, three hundred fifty or Three hundred fifty million, three hundred fifty)

ⓑ (4 X 1,000,000, 000) + (5 X 10,000,000) + (3 X 1,000,000) + (4 X 1,000) + (5 X 100) + (3 X 1): .... **(in Standard Form)**

(4,053,004,503 or 4,053,000,453 or 4,530,045,003)

ⓒ Four hundred thirty-five million, four hundred thousand, three hundred five: .... **(in Standard Form)**

(435,400,350 or 435,040,305 or 435,400,305)

ⓓ 200,000,000 + 60,000,000 + 20,000 + 6,000 + 20 + 6 : ....

(in Standard Form) (206,206,206 or 260,026,026 or 26,026,206)

ⓔ The value of the digit 8 in the number 180,302,201 is ....

(8,000,000,000 or 800,000,000 or 80,000,000)

2 Complete the following:

ⓐ The number 5,005,050,500: **(in Word Form)**

....

....

ⓑ 4,000,000,000 + 30,000,000 + 900,000 + 5,000 + 70

= (4 X ....) + (3 x ....) + (9 X ....)

+ (5 X ....) + (7 X ....).

ⓒ The place value of the digit 3 in the number 80,234,256

is ....

ⓓ If the digit 5 is in the Millions place, its value = (5 x ....).

ⓔ Seven hundred million seventy thousand =

(7 X ....) + (7 X ....).

3 Match:

1 Three billion, three thousand.

2 (3 X 1,000,000,000) + (3 X 10).

3 300,000,300.

4 Three hundred, thirty.

5 (3 X 100,000) + (3 X 1,000).

ⓐ Three hundred thousand, three hundred.

ⓑ 3,000,003,000.

ⓒ Three hundred thirty thousand.

ⓓ 3,000,000,030.

ⓔ (3 x 100,000) + (3 X 10).

4 Use the Place Value table to help you write the following numbers in different forms:

Billions (Milliards)	Millions			Thousands			Ones		
Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
3	0	9	0	2	0	0	2	4	0

(1) Standard Form: ....

(2) Word Form: ....

....

(3) Expanded Form: ....

....

(4) Expanded Notation: ....

....

Concept 1.2 Using Place Value

Exercises on Lessons 7, 8&9

Comparing Really Big Numbers, Comparing Numbers in Multiple Forms & Descending and Ascending Numbers

1 Complete the following table using (< , = or >):

a	760,715,213	....	680,715,312
b	245,675	....	254,576
c	6,550,852	....	6,505,852
d	500,800	....	5,000,800
e	620,620,620	....	602,602,602
f	20,000,900	....	20,000,009
g	45 millions ,45 thousands	....	45,045,000
h	(8 X 10,000,000) + (8 X 100)	....	80,000,008
i	(6X 1,000,000,000) + (6X1)	....	6,000,000,006
j	5,500,550	....	550 millions, 550
k	The smallest 9-digit-number	....	1 X 1,000,000,000
l	Three hundred thirty three million	....	3,330,000,000
m	100,000,000	....	The greatest 8-digit-number
n	The smallest 9-digit-number	....	1 X 1,000,000,000
o	(3 X 100,000,000) + (3X1)	....	Three hundred million, three
p	Two billion, five hundred five thousand, fifty	....	2,550,000,050

2 Choose the correct answer:

ⓐ .... < 795,002. (792,689 or 796,002 or 795,020)

ⓑ .... > 279. (219 or 269 or 280)

ⓒ .... < 1,000,200,000.
(1,002,000,000 or 1,020,000,000 or 1,000,020,000)

ⓓ .... > 70,500. (75,000 or 70,050 or 70,005)

3 Choose from the brackets and complete:

ⓐ .... < 256,256 < ....
(200,200 , 256,256 , 300,000)

ⓑ .... > 500,000 > ....
(500,000 , 600,000 , 400,000)

ⓒ 350,350 < .... < 450,450
(405,405 , 540,540 , 300,300)

ⓓ 4,000,600 > .... > 4,000,258
(4,000,150 , 4,000,500 , 4,000,000)

ⓔ 3,000,754 < .... < ....
(3,000,554 , 4,000,754 , 5,000,754)

ⓕ 150,452 > .... > ....
(150,352 , 150,252 , 150,552)

4 Arrange the following numbers in an ascending order:

ⓐ 25,030,000 , 550,000 , 5,000 , 45,000.

The order : .... , ... , ... , ...

ⓑ 360,548 , 205,687 , 545,352 , 154,200.

The order : .... , ... , ... , ...

ⓒ 557,859 , 557,895 , 557,589 , 557,985.

The order : .... , ... , ... , ...

ⓓ 500,005 , 505,550 , 500,000 , 500,500.

The order : .... , ... , ... , ...

5 **Arrange the following numbers in a descending order:**

ⓐ 909,909 , 900,000 , 999,999 , 900,990.

The order : .... , ... , ... , ...

ⓑ 55,125 , 55,512 , 55,152 , 55,251.

The order : .... , ... , ... , ...

ⓒ 300,002,100 , 200,030,001 , 300,020,010 , 200,300,100.

The order : .... , ... , ... , ...

6 **Arrange the following numbers in an ascending order (Write the numbers using the Standard Form):**

The order	Number	Standard Form
ⓐ	Five hundred thirty million, four hundred fifty.	....
ⓑ	Five hundred three million, four hundred thousand, five.	....
ⓒ	Five hundred thirty million, four hundred five thousand.	....
ⓓ	Five million , thirty thousand, four hundred fifty.	....
ⓔ	Fifty million, thirty thousand, forty five.	....

7 Arrange the following numbers in a descending order (Write the numbers using the Standard Form):

The order	Number	Standard Form
a	Ninety-nine million, nine hundred ninety thousand, ninety.	....
b	Nine billion, ninety.	....
c	Nine hundred and ninety-nine million.	....
d	Nine billion, ninety thousand.	....
e	Nine hundred million, nine hundred thousand, nine hundred.	....

8 Arrange the following numbers in an ascending order (Write the numbers using the Standard Form):

The order	Number	Standard Form
a	Five billion, three hundred thousand, ninety.	....
b	(5 X 1,000,000,000) + (3 X 100,000) + (9 X 10).	....
c	5,000,000,000 + 300,000 + 900.	....
d	5,000,003,900.	....
e	Five billions, three thousand, nine.	....

9 Arrange the following numbers in a descending order (Write the numbers using the Standard Form):

The order	Number	Standard Form
ⓐ	1,000,000,000 + 500,000 + 3,000 + 200 + 5.	....
ⓑ	(1 X 1,000,000,000) + (3 X 10,000) + (2 X 100) + (5 X 10).	....
ⓒ	1 billion, 50 million, 325 thousand.	....
ⓓ	1,500,030,250.	....
ⓔ	1 billion, 32 million, 5 thousand.	....

10 Choose the correct answer:

ⓐ The value of the digit in the Hundred-thousands place .... the value of the digit in the Millions place. (< or = or >)

ⓑ 50 Ten-millions .... 5 Billions. (< or = or >)

ⓒ 450,000,450 .... Forty five million forty five. (< or = or >)

ⓓ .... > 3 millions. (3,000,000 or 2,999,999 or 10,000,000)

ⓔ 40 millions > .... > 30 millions.

(350,220,000 or 35,202,000 or 3,022,000)

ⓕ The **largest** 8-digit-number > ....

(99,999,999 or 100,000,000 or 10,000,000)

ⓖ The **smallest** 9-digit-number < ....

(One billion or 100 million or 999 thousand)

Worksheet 4

1 Choose the correct answer:

ⓐ Two billion, three thousand, three: .... **(in Standard Form)**

(2,000,003,003 or 2,000,303,000 or 2,003,003)

ⓑ The digit 8 in the number 214,284,697 is in the .... place.

(Tens or Ten-thousands or Ten-millions)

ⓒ 200,450 > ....

(204,500 or 245,000 or 200,045)

ⓓ The **smallest** 6-digit-number < ....

(99,999 or 1,000,000 or 99,000)

ⓔ The **largest** even number consisting of 7 different digits is ....

(9,876,543 or 9,876,534 or 9,999,998)

2 Complete the following:

ⓐ (9 X 100,000,000) + (2 X 100,000) + (6 X 1,000) + (8 X 1)

= .... + ... + ... + ...

ⓑ (.......................... Thousands, ... Tens) X 100 = 4,050 X 100

= ....

ⓒ The place value of the digit "0" in the number 9,025,123

is ....

ⓓ The value of the digit 5 in the Millions place = **1,000 times** the value of the digit 5 in the .... place.

ⓔ (8 X 1,000,000) + (8 X 1,000) = **(in Word Form)**

....

....

3 Complete using (< , = or >):

a	The value of digit 8 in the Hundred-thousand place.	....	The value of the digit 8 in the Millions place.
b	(3 X 1,000,000,000) + (3 X 10)	....	3,000,003,000
c	The greatest 10-digit-number	....	10 Millions
d	600,000,000 + 60,000 + 600 + 6	....	600,060,606
e	Eight hundred eighty eight thousand.	....	Eight hundred eighty thousand, eight.

4 Arrange the following numbers in an ascending order:

10,025,000 , 10,002,005 , 10,200,050 , 10,020,500

The order : .... , ... , ... , ...

Exercises on Lessons 10&11

Predicting the Unpredictable & Rounding Rules

1 Complete the following table:

Number	Front-end Estimation
ⓐ 400,235,950	....
ⓑ 7,453,002,650	....
ⓒ 25,000,205	....
ⓓ 8,999,899	....
ⓔ 459,560	....
ⓕ 4,950,009,555	....
ⓖ 412,325,696	....

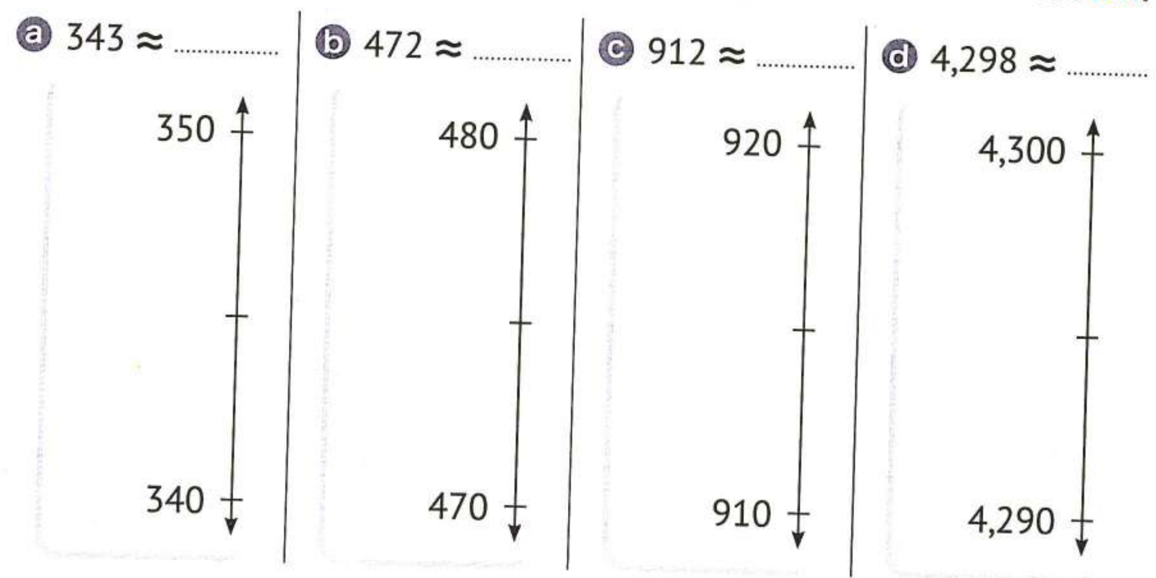
2 Write the following numbers in Standard Form and then estimate the number by the Front-end estimation:

	Numeral	Standard Form	Estimation
ⓐ	(9 X 1,000,000) + (6 X 100) + (5 X 10) + (4 X 1)	....	....
ⓑ	(8 X 10,000,000) + (7 X 100,000) + (3 X 1,000) + (8 X 1)	....	....
ⓒ	Eight hundred thirty million, sixty five thousand, four hundred.	....	....
ⓓ	Nine billion, eighty million, fifty thousand, five hundred sixty three.	....	....
ⓔ	500,000,000 + 60,000,000 + 40,000 + 8.	....	....

f	80,000,000 + 6,000,000 + 20,000 + 8,000.	....	....
g	452 million, 25 thousand, 315.	....	....
h	Six billion, six hundred fifty million, nineteen thousand, four hundred.	....	....

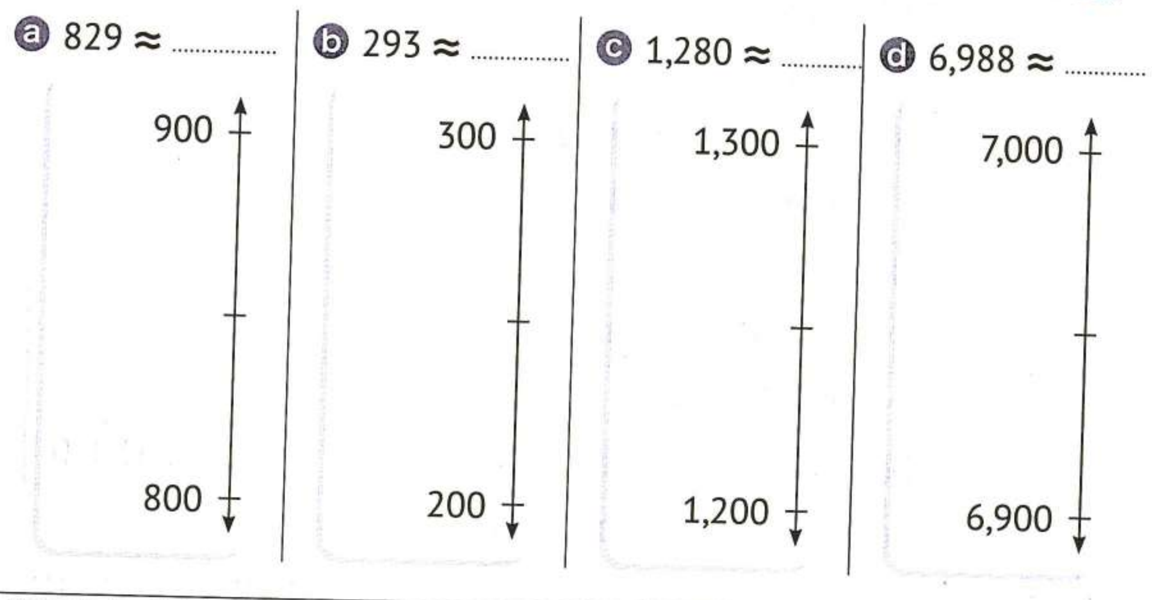
3 **Write down the midpoint of the number line. Then locate each number on the number line and round each number to the nearest ten:**

a 343 ≈ .... b 472 ≈ .... c 912 ≈ .... d 4,298 ≈ ....

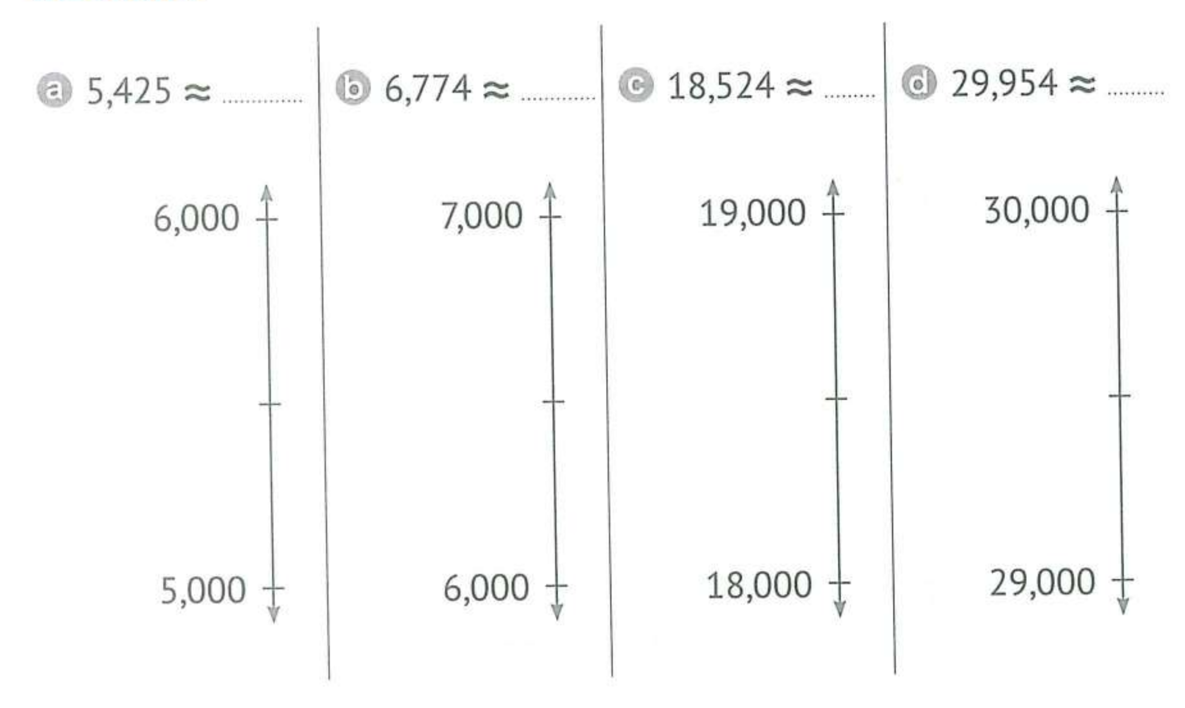


4 **Write down the midpoint of the number line. Then locate each number on the number line and round each number to the nearest hundred:**

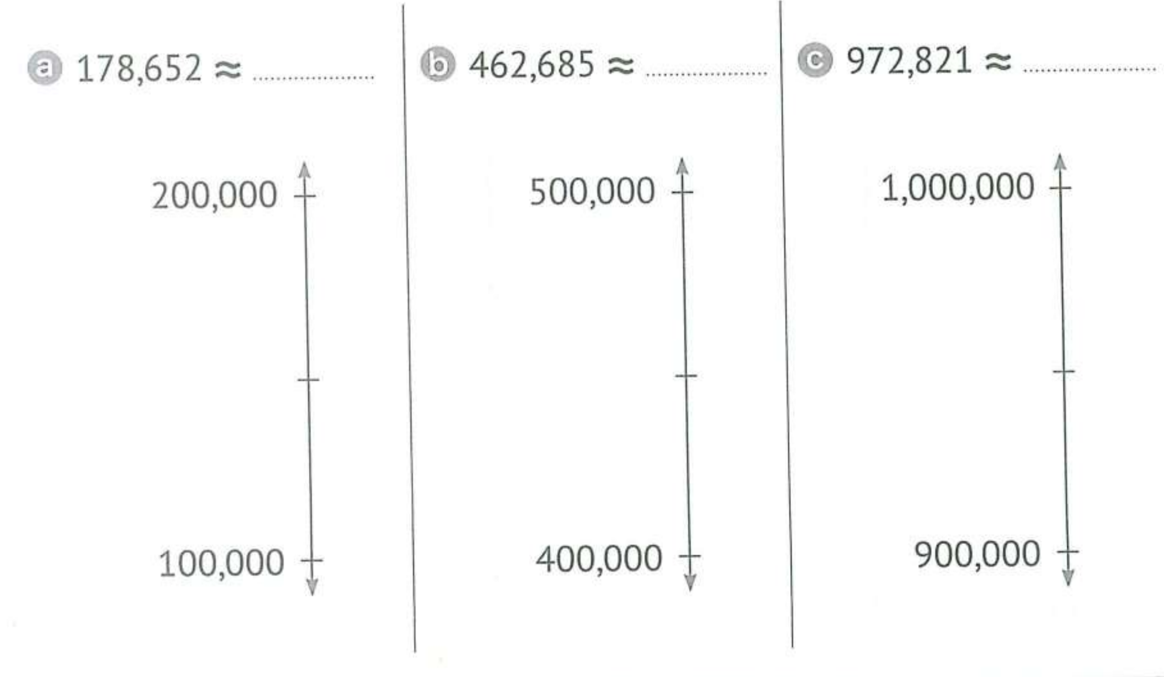
a 829 ≈ .... b 293 ≈ .... c 1,280 ≈ .... d 6,988 ≈ ....



5 Write down the midpoint of the number line. Then locate each number on the number line and round each number to the nearest thousand:



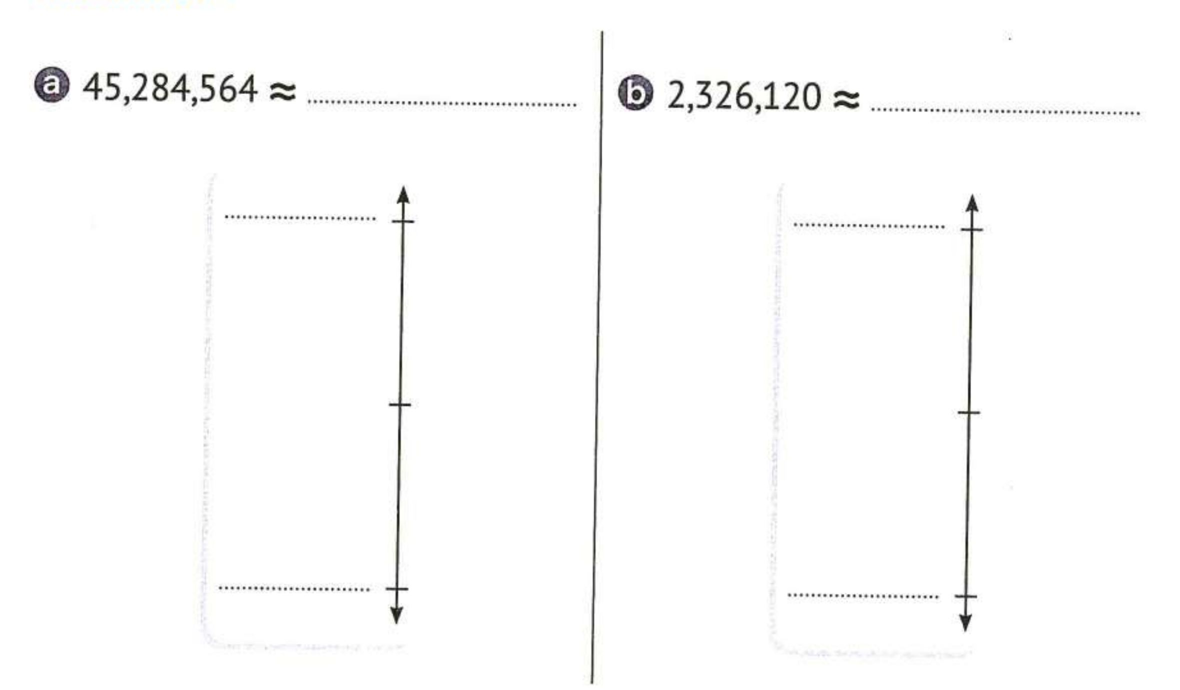
6 Write down the midpoint of the number line. Then locate each number on the number line and round each number to the nearest hundred-thousand:



7 Write down the midpoint of the number line. Then locate each number on the number line and round each number to the nearest **ten-million**:

ⓐ 45,284,564 ≈ ....

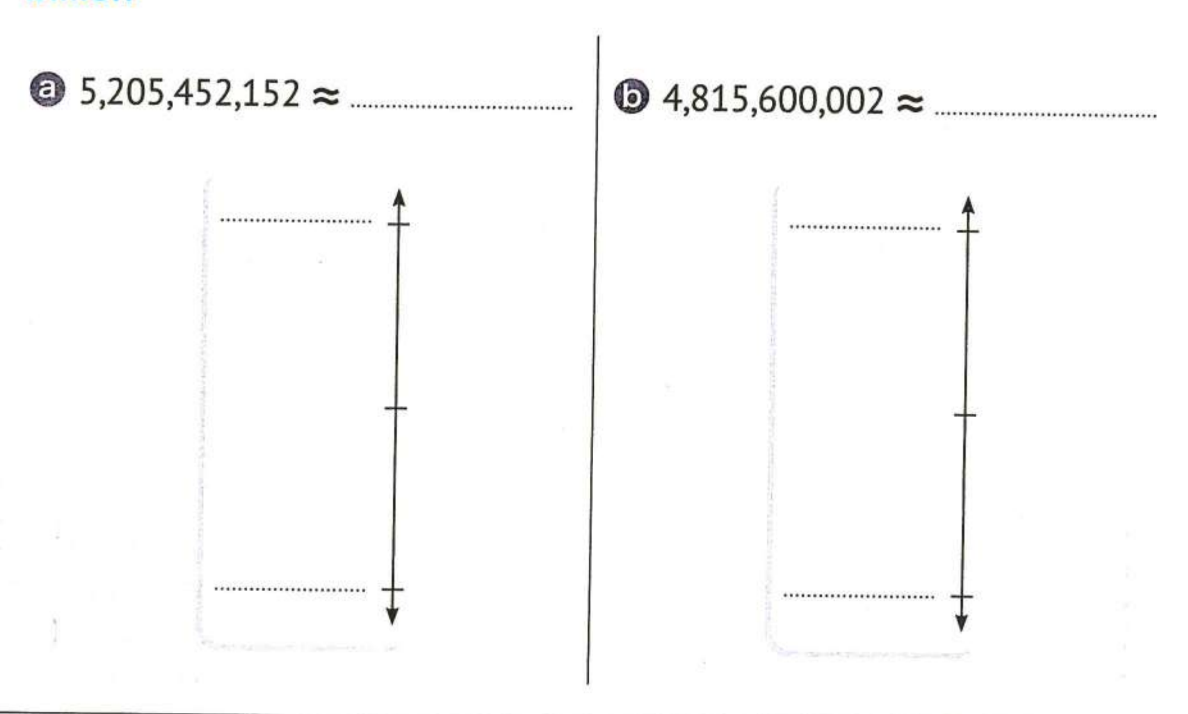
ⓑ 2,326,120 ≈ ....



8 Write down the midpoint of the number line. Then locate each number on the number line and round each number to the nearest **billion**:

ⓐ 5,205,452,152 ≈ ....

ⓑ 4,815,600,002 ≈ ....



9 Round the following numbers to the nearest 10:

ⓐ 54 ≈ ....
ⓑ 76 ≈ ....
ⓒ 845 ≈ ....
ⓓ 967 ≈ ....
ⓔ 7,552 ≈ ....
ⓕ 2,595 ≈ ....
ⓖ 75,999 ≈ ....
ⓗ 99,999 ≈ ....

10 Round the following numbers to the nearest 1,000:

ⓐ 7,869 ≈ ....
ⓑ 6,289 ≈ ....
ⓒ 4,587 ≈ ....
ⓓ 9,964 ≈ ....
ⓔ 29,456 ≈ ....
ⓕ 99,598 ≈ ....
ⓖ 99,900 ≈ ....
ⓗ 456,400 ≈ ....

11 Find the result of each of the following, using the Front-end Estimation Strategy and the Rounding Rule Strategy to the nearest 10 and determine which of them is closer to the actual answer:

Question	Actual Answer	Front-end Estimation Strategy	Rounding Rule Strategy
ⓐ 45 + 27	....	.... ( )	.... ( )
ⓑ 22 + 47	....	.... ( )	.... ( )
ⓒ 19 + 28	....	.... ( )	.... ( )
ⓓ 156 + 142	....	.... ( )	.... ( )
ⓔ 344 + 256	....	.... ( )	.... ( )
ⓕ 123 + 357	....	.... ( )	.... ( )

ⓖ 89 – 15	....	.... ( )	.... ( )
ⓗ 800 – 758	....	.... ( )	.... ( )
ⓘ 456 – 359	....	.... ( )	.... ( )
ⓙ 987 – 245	....	.... ( )	.... ( )

12 Round the following numbers:

ⓐ 4,545 ≈ .... (To the nearest 1,000)

ⓑ 258,654 ≈ .... (To the nearest 100,000)

ⓒ 299,99 ≈ .... (To the nearest 10)

ⓓ 1,000,000 ≈ .... (To the nearest 100,000)

ⓔ 89,541 ≈ .... (To the nearest 10,000)

ⓕ 654 ≈ 650. (To the nearest ....)

ⓖ 8,840 ≈ 9,000. (To the nearest ....)

ⓗ 2,458,235 ≈ 2,000,000. (To the nearest ....)

ⓘ 458,605 ≈ 459,000. (To the nearest ....)

ⓙ 7,456,572 ≈ 7,000,000. (To the nearest ....)

ⓚ 754 + 245 = ... ≈ .... (To the nearest 10)

ⓛ 2,856 + 6,410 = ... ≈ .... (To the nearest 1,000)

ⓜ 876 – 225 = ... ≈ .... (To the nearest 100)

ⓝ 15,000 – 125 = ... ≈ .... (To the nearest 1,000)

13 Choose the correct answer:

ⓐ 980 ≈ ………………………… . *(To the nearest 100)*

(900 or 990 or 1,000)

ⓑ 906,456 ≈ ………………………… . *(To the nearest 100,000)*

(1,000,000 or 910,000 or 900,000)

ⓒ 99,768 ≈ ………………………… . *(To the nearest 1,000)*

(100,000 or 90,000 or 99,000)

ⓓ 6,450,450, ≈ ………………………… . *(To the nearest 1,000,000)*

(5,000,000 or 6,000,000 or 7,000,000)

ⓔ 258 ≈ 300. *(To the nearest …………………)*

(10 or 100 or 10,000)

ⓕ 6,587 ≈ 6,600. *(To the nearest …………………)*

(10 or 100 or 1,000)

ⓖ 295,120 ≈ 300,000. *(To the nearest …………………)*

(100 or 10,000 or 10,000,000)

ⓗ The **largest** integer that can be rounded to the nearest **10** so that the result is 450 is ………………………… . (458 or 454 or 450)

ⓘ The **smallest** integer that can be rounded to the nearest **100** so that the result is 1,200 is ………………………… . (1,159 or 1,299 or 1,150)

Worksheet 5

1 Choose the correct answer:

ⓐ 7,542 ≈ .... *(To the nearest thousand)*

(7,000 or 8,000 or 75,000)

ⓑ The smallest 7-digit-number is ....

(9,999,999 or 1,000,000 or 1,023,456)

ⓒ 6,566 ≈ 6,600. *(To the nearest ....)*. (10 or 1,000 or 10,000)

ⓓ The number of integers that can be rounded to the nearest **10**, so that the result is 70 is .... (5 or 10 or 11)

ⓔ The number that comes right **after** the number 2,099,999 is .... (20,000,000 or 2,100,000 or 2,099,998)

2 Complete the following:

ⓐ Eight hundred ninety-six million, three thousand, fifteen **(in Expanded Form)**:

= .... + ... + ... + ... + ... + ...

ⓑ The place value of the digit 5 in the number **5**,069,420,000 is ....

ⓒ 6,475 + 4,125 = ... ≈ .... *(To the nearest 1,000)*

ⓓ The digit 7 in the Billions place = ... times the digit 7 in the Hundred-thousands place

ⓔ .... ≈ 500. *(To the nearest 100)*

"Complete by writing the greatest whole number possible"

3 Arrange the following numbers in an ascending order:

Three hundred thirty thousand , 30,000,030,000 , 30,030,000 , Thirty million

The order : .... , ... , ... , ...

4 Complete the following table:

Number	To the Nearest 10	To the Nearest 100	To the Nearest 1,000	To the Nearest 10,000
a 56,452	....	....	....	....
b 805,605	....	....	....	....
c 9,499	....	....	....	....
d 9,809	....	....	....	....
e 10,200	....	....	....	....

Concept 2.1 Using Addition and Subtraction Strategies

Exercises on Lesson 1

Properties of Addition and Subtraction

1 **Complete the following (Write the addition property):**

ⓐ 7 + 6 = ... + 7. ".. Property"

ⓑ (7 + ...) + 4 = 7 + (9 + 4). ".. Property"

ⓒ 8 + 0 = ... ".. Property"

ⓓ 27 + 19 = 19 + ... ".. Property"

ⓔ 0 + ... = 9. ".. Property"

ⓕ (41 + 27)+ 21 + 94 = ... + (27 + 21) + ...

".. Property"

ⓖ .... + 18 = 18 + 39. ".. Property"

ⓗ 28 + ... = 28. ".. Property"

ⓘ (.......... + 125) + 417 = 300 + (.......... + 417).".. Property"

2 **Complete the following problems using the properties of addition: (Write the property used):**

ⓐ 15 + 27 + 85 = ... + 85 + 27 "...................................... Property"

= (.............. + ...) + ... "...................................... Property"

= .... + ...

= ....

ⓑ 755 + 615 + 245 = 755 + ... + 615 "...................................... Property"

= .... + (.............. + ...) "...................................... Property"

= .... + ...

= ....

ⓒ 42 + 908 + 92 = 42 + (.............. + ...) " .... Property"

= .... + ... = ...

ⓓ 244 + 0 + 256 = 0 + ... + 256 " .... Property"

= 0 + (.............. + ...) " .... Property"

= .... + ... " .... Property"

= ....

ⓔ 244 + 0 = 0 + ... " .... Property"

= ....

3 Choose the correct answer:

ⓐ 9 + 2 = 2 + 9. " .... Property"

(Neutral Element or Commutative or Associative)

ⓑ (100 + 117) + 25 = 100 + (117 + 25). " .... Property"

(Neutral Element or Commutative or Associative)

ⓒ 245 + 0 = 0 245. " .... Property"

(Neutral Element or Commutative or Associative)

ⓓ 8 + (5 + 12) = (8 + 5) + 12. " .... Property"

(Neutral Element or Commutative or Associative)

ⓔ 205 + 15 = 15 + 205. " .... Property"

(Neutral Element or Commutative or Associative)

ⓕ 0 + 215 = 215 + 0. " .... Property"

(Neutral Element or Commutative or Associative)

ⓖ 4 + 3 + (7 + 6) = 4 + (3 + 7) + 6. " .... Property"

(Neutral Element or Commutative or Associative)

ⓗ 45 + 0 = 45. " .... Property"

(Neutral Element or Commutative or Associative)

ⓘ 42 + 15 + 85 = 42 + (15 + 85) = 42 + 100 = 142. " .... Property"

(Neutral Element or Commutative or Associative)

ⓙ 45 + 55 + 123 + 27 = (45 + 55) + (123 + 27) = 100 + 250 = 350.

" .... Property" (Neutral Element or Commutative or Associative)

Worksheet 1

1 Complete the following:

a) 45 + 65 = 65 + ... "..................... Property"

b) (85 + 48) + 52 = ... + (48 + 52).

"..................... Property"

c) The value of the digit 8 in the number 2**8**,147,256 is ....

d) 25,458 ≈ .... (To the nearest 10,000)

e) 732 + ... = 732. "..................... Property"

2 Choose the correct answer:

a) 421 + 45 = 45 + 421. "..................... Property"

(Neutral Element or Commutative or Associative)

b) The smallest 6-same-digit-number is ....

(999,999 or 100,000 or 111,111)

c) 25,452 ≈ 30,000. (To the nearest ....)

(1,000 or 10,000 or 100,000)

d) 25 + (75 + 26) = (25 + 75) + 26. "..................... Property"

(Neutral Element or Commutative or Associative)

e) Five hundred fifty million, five: .... **(in Standard Form)**

(550,005 or 550,005,000 or 550,000,005)

3 Complete using (< , = or >):

a) Three million, five hundred ☐ 3,000,050

b) 370,205 ☐ (3 X 100,000) + (7 X 1,000) + (2 X 100) + (5 x 1)

c) 909,990 ☐ 990,090

d) 400,300,200 ☐ 400 + 300 + 200

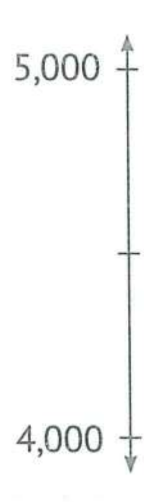
4 **Arrange the following numbers in an ascending order:**

3,584,852 , 3,458,582 , 3,854,852 , 3,548,258

The order: .... , ... , ... , ...

5 **Write down the midpoint of the number line. Then locate each number on the number line and round each number to the nearest 1,000:**

4,458 ≈ ....



Exercises on Lessons 2&3

Mental Math Strategies & Addition with Regrouping

1 **Use the Front-end Estimation Strategy, then find the result:**

ⓐ 45 + 79 → 40 + ... = ...

ⓑ 98 – 47 → .... – .... = ...

ⓒ 125 + 514 → .... + ... = ...

ⓓ 956 – 215 → .... – .... = ...

ⓔ 956 – 215 → .... – .... = ...

ⓕ 4,357 + 6,214 → .... + ... = ...

ⓖ 9,784 – 3,215 → .... – .... = ...

ⓗ 24,410 + 34,250 → .... + ... = ...

ⓘ 226,842 – 113,210 → .... – .... = ...

2 **Use the Rounding Strategy, then find the result:**

ⓐ 76 + 42 *(To the nearest 10)* → 80 + 40 = ...

ⓑ 84 + 37 *(To the nearest 10)* → .... + ...
= ....

ⓒ 96 – 24 *(To the nearest 10)* → .... – ....
= ....

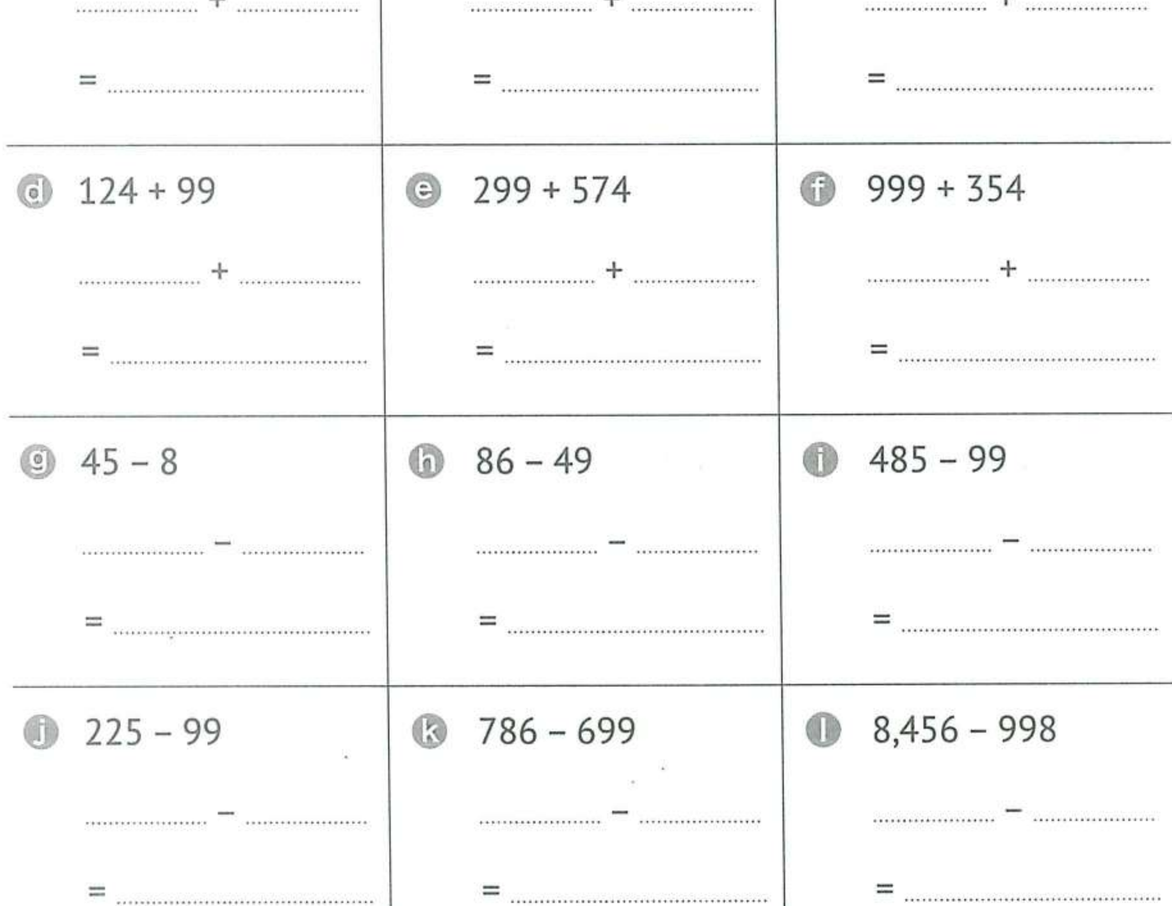
ⓓ 154 + 318 *(To the nearest 100)* → .... + ...
= ....

ⓔ 368 - 318 *(To the nearest 100)* → .... – ....
= ....

ⓕ 2,159 + 3,769 *(To the nearest 1,000)* → .... + ...
= ....

ⓖ 77,981 – 69,328 *(To the nearest 1,000)* → .... – ....
= ....

3 Use the Compensation Strategy to find the result (Show your steps):



ⓐ 23 + 9 .... + ... = ...	ⓑ 224 + 9 .... + ... = ...	ⓒ 26 + 29 .... + ... = ...
ⓓ 124 + 99 .... + ... = ...	ⓔ 299 + 574 .... + ... = ...	ⓕ 999 + 354 .... + ... = ...
ⓖ 45 – 8 .... – .... = ...	ⓗ 86 – 49 .... – .... = ...	ⓘ 485 – 99 .... – .... = ...
ⓙ 225 – 99 .... – .... = ...	ⓚ 786 – 699 .... – .... = ...	ⓛ 8,456 – 998 .... – .... = ...

4 Use the Composing and Decomposing Strategy to find the result (Show your steps):

ⓐ 56 + 24

= .... + ... + ...

= .... + ...

= ....

ⓑ 45 + 37

= .... + ... + ...

= .... + ...

= ....

ⓒ 256 – 45

= .... – .... – ....

= .... – ....

= ....

ⓓ 564 – 45

= .... – .... – ....

= .... – ....

= ....

ⓔ 542 + 231

= ....

= ....

= ....

ⓕ 986 + 241

= ....

= ....

= ....

ⓖ 3,175 – 253

= ....

= ....

= ....

ⓗ 8,456 – 998

= ....

= ....

= ....

ⓘ 6,725 + 1,234

= ....

= ....

= ....

ⓙ 3,957 – 2,214

= ....

= ....

= ....

5 Use Counting Up Strategy to find the result:

ⓐ 62 – 57 = ...

ⓑ 91 – 84 = ...

ⓒ 382 – 379 = ...

ⓓ 210 – 190 = ...

ⓔ 1,002 – 999 = ...

ⓕ 5,055 – 5,049 = ...

6 Find the result of each of the following:

(a) 65,742 + 24,953	(b) 497,864 + 153,692	(c) 974,356 + 25,644 ....
(d) 124,629 + 298,680	(e) 845,656 + 975,546	(f) 999,999 + 200,001 ....

(g) 225,564 + 347,660 = ...

(h) 341,250 + 219,263 = ...

(i) 3,224,659 + 6,418,256 = ...

(j) 332,456,989 + 667,543,011 = ...

7 Complete the following table:

(Determine which of the estimates is closest to the actual solution)

Problem	To the Nearest 10	To the Nearest 100	To the Nearest 1 000
(a) 24,456 + 13,428	.... + ...	.... + ...	.... + ...
....	........( )	........( )	........( )

Problem	To the Nearest 10	To the Nearest 100	To the Nearest 1 000
(b) 256,634 + 885,365	.... + ...	.... + ...	.... + ...
....	........( )	........( )	........( )

Problem	To the Nearest 10	To the Nearest 100	To the Nearest 1 000
ⓒ 2,256 + 3,815	.... + ...	.... + ...	.... + ...
....	..........( )	..........( )	..........( )

Problem	To the Nearest 10	To the Nearest 100	To the Nearest 1 000
ⓓ 125,278 + 289,132	.... + ...	.... + ...	.... + ...
....	..........( )	..........( )	..........( )

8 Answer the following:

ⓐ Nada has 7,245 piasters, and Ahmed has 9,372 piasters.

What is the sum of what Nada and Ahmed have together?

Explain your steps and then check the reasonableness of your answer.

Estimation (Use Rounding to the Nearest 100):

....

The actual answer:

....

ⓑ The number of girls in a school is 458 and the number of boys is 367. What is the total number of students in the school?

Explain your steps and then check the reasonableness of your answer.

Estimation (Use Rounding to the Nearest 10):

....

The actual answer:

....

ⓒ The desert silver ant is the fastest ant on the planet. It can move about 855 mm per second. If this ant can maintain this speed for two seconds, how far will it go?

Explain your steps and then check the reasonableness of your answer.

Estimation (Use Rounding to the Nearest 100):

....

The actual answer:

....

ⓓ The distance between Aswan and Assiut is 511 km, and the distance between Assiut and Alexandria is 619 km.

How far is the distance between Alexandria and Aswan?

Explain your steps and then check the reasonableness of your answer.

Estimation (Use Rounding to the Nearest 100):

....

The actual answer:

....

ⓔ 686 tourists visited the Egyptian Museum on Sunday, and 621 tourists visited it on Monday.

How many tourists visited the museum in the two days?

Explain your steps and then check the reasonableness of your answer.

Estimation (Use Rounding to the Nearest 100):

....

The actual answer:

....

Worksheet 2

1 Complete the following:

ⓐ 25 + 99 = 24 + ... = ...

ⓑ 300,750 = (3 X ....) + (7 X ....) + (5 X ....)

ⓒ The value of the digit 9 in the Ten-millions place is ....

ⓓ 8 + (7 + 9) = (8 + 7) + ... "................... *Property*"

ⓔ 74,632 ≈ .... *(To the nearest 1,000)*

2 Choose the correct answer:

ⓐ 7,145 ≈ 7,100. *(To the nearest ....)* (100 or 1,000 or 10,000)

ⓑ (8 X 100,000,000) + (8 X 1,000) = ...

(808,000 or 800,008,000 or 800,800,000)

ⓒ 56 + ... = 54 + 100. (100 or 102 or 98)

ⓓ 75 – 49 = 74 – .... (50 or 48 or 98)

ⓔ 25 + 75 = 75 + 25. "................... *Property*"

(Neutral Element or Commutative or Associative)

3 Arrange the following numbers in a descending order:

990,909 , 9,900,990 , 100,000 , 1,000,000

The order: .... , ... , ... , ...

4 773 ships passed through the Suez Canal in January, and 375 ships crossed it in February. Find the number of ships that passed through it in the two months? Explain your steps and then check the reasonableness of your answer.

Estimation (Use Rounding to the Nearest 100):

....

The actual answer:

....

Exercises on Lessons 4&5

Subtraction Strategies & Subtraction with Regrouping

1 Solve the following problems using the **Count Down Strategy**:

ⓐ
  654
−324
……………

……………………………………

ⓑ
  627
−254
……………

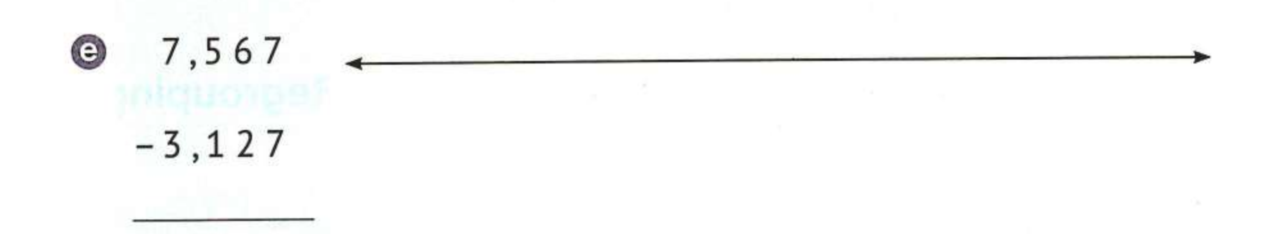
……………………………………

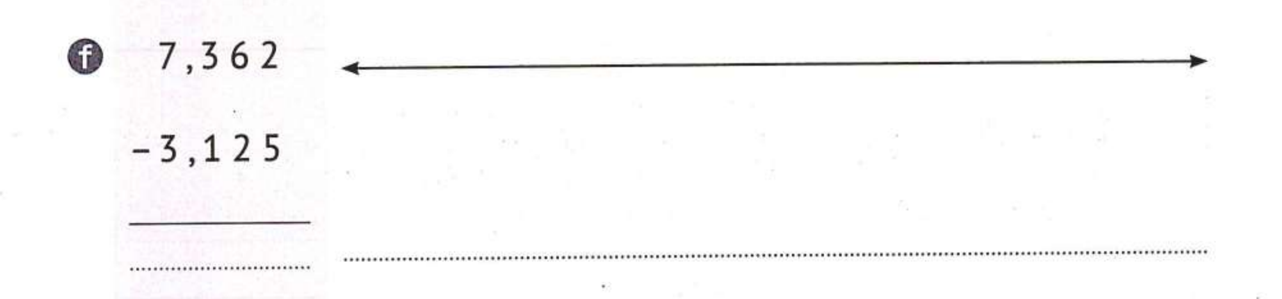
ⓒ
  900
−245
……………

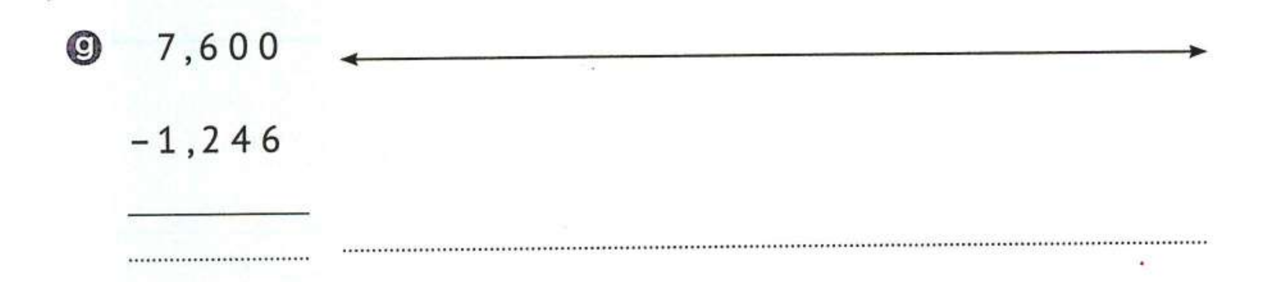
……………………………………

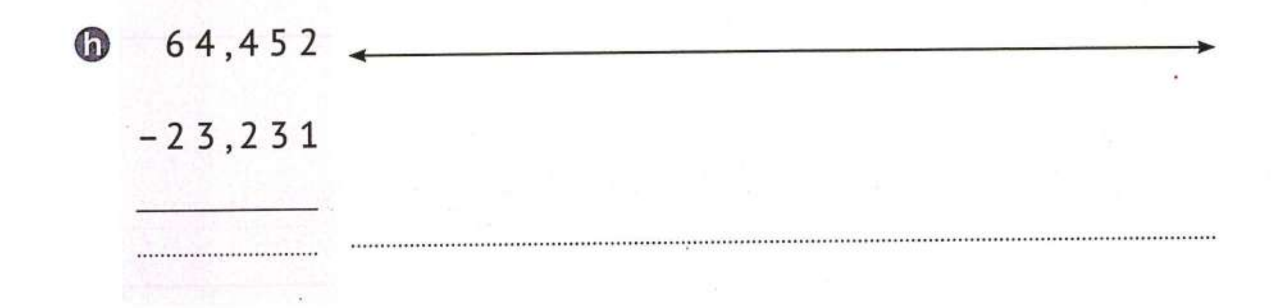
ⓓ
  3,245
−1,342
……………

……………………………………


e
7,567
-3,127


f
7,362
-3,125


g
7,600
-1,246


h
64,452
-23,231

2 Solve the following problems using the Count-on Strategy:

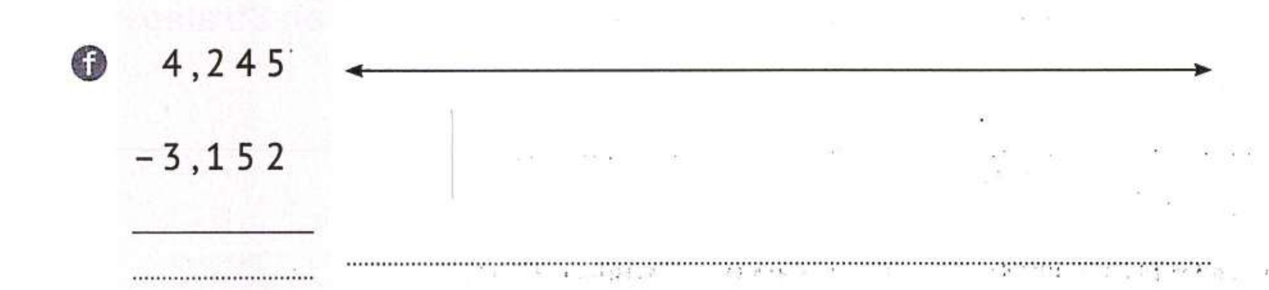
a)
```
  748
- 516
-----
```

b)
```
  517
- 325
-----
```

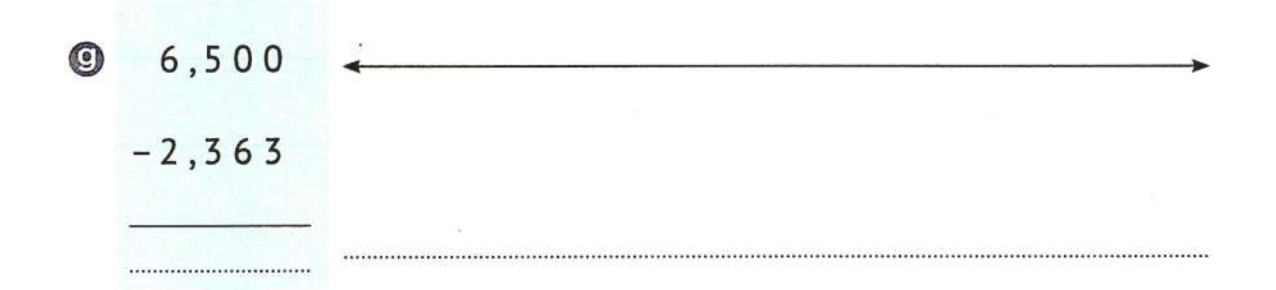
c)
```
  800
- 624
-----
```

d)
```
  3,475
- 1,385
-------
```

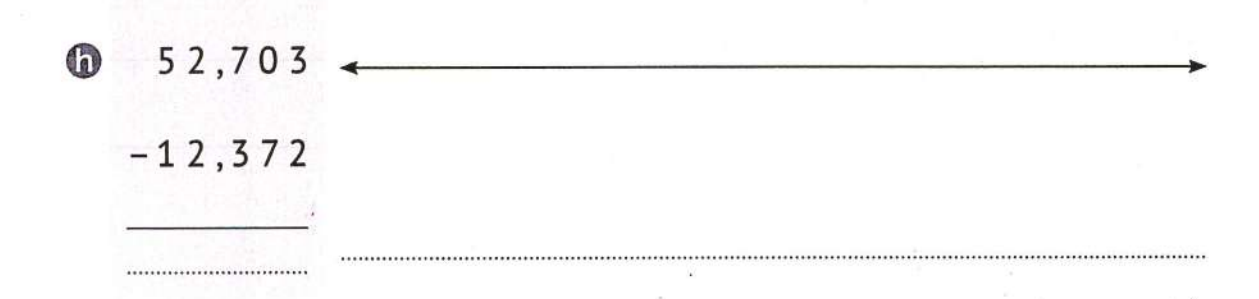
e)
```
  7,357
- 3,253
-------
```



(f)
  4,245
- 3,152
____
....



(g)
  6,500
- 2,363
____
....



(h)
  52,703
- 12,372
____
....

3 Use the Place Value table to find the difference:

(a) 7,845 - 3,314 = ...

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

b 6,624 – 5,123 = ...

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

c 38,042 – 27,305 = ...

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

d 48,638 – 26,246 = ...

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

ⓔ 365,248 - 134,125 = ...

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

4 Find the result of each of the following:

ⓐ 65,438 − 29,278 = ...

ⓑ 700,976 − 158,295 = ...

ⓒ 250,039 − 72,278 = ...

ⓓ 706,007 − 520,055 = ...

ⓔ 427,239 − 209,136 = ...

ⓕ 100,000 − 1 = ...

ⓖ 725,428 - 219,428 = ...

ⓗ 401,800 - 84,658 = ...

ⓘ 7,602,630 - 6,583,108 = ...

ⓙ 125,324,725 - 89,000,999 = ...

5 Subtract using one of the subtraction strategies, then round each number and estimate the result: (Show your steps using the required strategy and the Rounding Strategy):

a

  650
− 542
....

Rounding to the Nearest 100

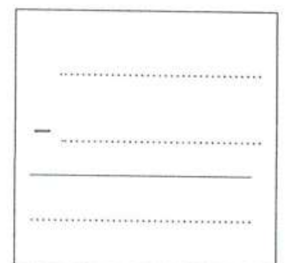
....
− ....
....

Using Counting Down with the Number Decomposition Strategy:

b

  3,245
− 2,275
....

Rounding to the Nearest 1,000



Using Counting On with the Number Decomposition Strategy:

ⓒ

  15,207
- 12,352
————
....

Rounding to the Nearest 10,000

....
- ....
————
....

Using Place Value table Strategy:

Thousands			Ones		
Hundreds	Tens	Ones	Hundreds	Tens	Ones

6 Answer the following:

ⓐ Some students wanted to plant 621 trees in their village.

They planted 476 trees. How many trees are left?

....

....

....

ⓑ Sarah had 1,270 pounds, she bought a dress for 630 pounds.

How many pounds are left with Sarah?

....

....

....

ⓒ A primary school with 1,028 students, 542 of whom are girls.

How many boys are in this school?

....

....

(d) Eman has 3,256 pounds, and Sameh has 2,804 pounds.

What is the difference between their money?

....

....

....

(e) The height of a tree is 1,200 cm, and the length of its shadow is 235 cm.

How much taller is the tree than its shadow?

....

....

....

(f) There are 4,015 books in the school library, 725 books were borrowed by the students.

How many books are left in the library?

....

....

....

(g) A family saved 3,250 pounds to buy a TV.

If the price of the TV is 5,100 pounds, how many pounds does this family need to buy the TV?

....

....

....

Worksheet 3

1 Complete the following:

ⓐ Nine billion, five hundred thousand, four hundred: ....

(in Standard Form)

ⓑ The place value of the digit 6 in the number 5**6**,124,248 is ....

ⓒ 245 + 243 = ... + 245.

ⓓ 27,957 ≈ 30,000. *(To the nearest ....)*

2 Choose the correct answer:

ⓐ The **smallest** 6-even-digit-number is ....

(100,003 or 100,000 or 102,254)

ⓑ 4,000,000 + 60,000 + 100 + 9 = ...

(64,000,109 or 40,060,109 or 4,060,109)

ⓒ 1,000,000 − 1 = ... (9,999,999 or 999,999 or 99,999)

ⓓ 50 Hundred-thousands = ... Thousands. (500 or 5,000 or 50,000)

ⓔ 45 + 0 = 45. *(.................. Property)*

(Neutral Element or Commutative or Associative)

3 Find the result of each of the following:

ⓐ
```
   75,654
 + 15,257
 --------
 ........
```

ⓑ
```
   40,802
 +  9,258
 --------
 ........
```

ⓒ
```
   63,880
 − 52,209
 --------
 ........
```

ⓓ
```
   800,002
 −  89,566
 ---------
 .........
```

4 Subtract using the number line:

754 − 245 = ...

....

5 773 ships passed through the Suez Canal in January, and 375 ships passed in February. Find the difference between the number of ships that passed through it in the two months.

....

Concept 2.2 Solving Multistep Problems

Exercises on Lessons 6&7

Bar Models, Variables and Story Problems & Solving Multistep Story Problems with Addition and Subtraction

1 **Read the following questions. Create a Bar Model and an Equation for each problem and then find the solution.**

ⓐ There are 1,200 ants in the colony. Some ants go out looking for food while 700 ants dispose of the garbage outside the colony.
How many ants are searching for food?

Bar Model:

....	
....	....

Equation: ....

Solution: ....

ⓑ There are 20,000 ants in the colony. 12,000 ants of them are females and the rest are males. How many male ants are there in the colony?

Bar Model:

....	
....	....

Equation: ....

Solution: ....

c There are 12,000 species of ants. 2,500 of these species live in Africa and the rest live in other parts of the world.

How many species do not live in Africa?

Bar Model:

....	
....	....

Equation: ....

Solution: ....

d Tariq practiced walking. On Monday, Tariq walked a number of steps, then took another 10,075 steps on Tuesday. Now, a total of 78,200 steps were taken by Tariq . How many steps did he take on Monday?

Bar Model:

....	
....	....

Equation: ....

Solution: ....

e A worker ant travelled 3,500 meters on Monday and then 2,450 meters on Tuesday in search of food.

How far did the ant travel on Monday and Tuesday together?

Bar Model:

....	
....	....

Equation: ....

Solution: ....

ⓕ The number of books in the school library is 890, and the number of borrowed books is 258. If students return all borrowed books, how many books will be in the library?

Bar Model:

....	
....	....

Equation: ....

Solution: ....

ⓖ Mahmoud saved 250,000 piasters and got 39,000 piasters from his father. What is the sum of Mahmoud's money?

Bar Model:

....	
....	....

Equation: ....

Solution: ....

2 Read the following questions. Then use the word problems solving steps.

ⓐ The Suez Canal extends from Port Said to the city of Suez, and its length is 193,120 meters. If a boat travels 58,620 meters every day for two days, how many more meters will it have to travel to reach the end of the canal?

....

....

....

b The population of Tanta is 404,901 people. The population of Benha is 167,029 people, and the population of Kafr Al-Dawwar is 67,370. What is the population of Banha and Kafr Al-Dawwar together? And what is the difference between their population and Tanta's population?

....

....

c Salma was counting the ants in the colony. She counted 1,525 ants on Monday, 19,750 ants on Tuesday, and 3,705 ants on Wednesday. If there are 30,520 ants in the colony, how many ants does she still need to count?

....

....

d A local bakery sold 1,232 doughnuts in one day. If they sold 876 doughnuts in the morning, how many doughnuts did they sell during the rest of the day?

....

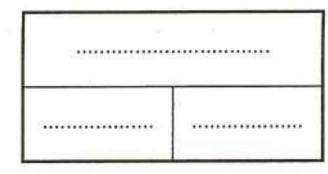
....

2 Solve the following equations:

(Make a Bar Model and then find the solution) :

a $X + 125 = 207.$

Bar Model:



Solution: ....

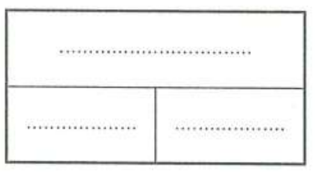
ⓑ X + 514 = 1,025.

Bar Model:

Solution: ....

ⓒ 2,087 + Y = 7,248.

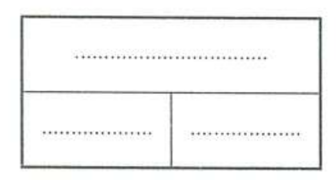
Bar Model:



Solution: ....

ⓓ 69 + Y = 1,200.

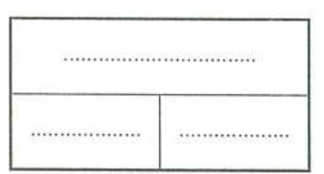
Bar Model:



Solution: ....

ⓔ M − 215 = 375.

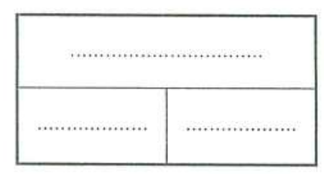
Bar Model:



Solution: ....

ⓕ A − 258 = 915.

Bar Model:



Solution: ....

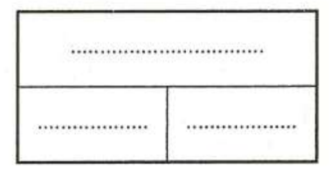
ⓖ 542 − B = 289.

Bar Model:

Solution: ....

ⓗ 845 − N = 457.

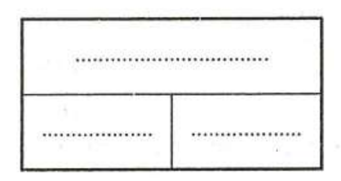
Bar Model:



Solution: ....

ⓘ K + 200 + 50 = 455.

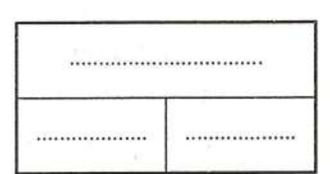
Bar Model:



Solution: ....

ⓙ 75 + R + 125 = 620.

Bar Model:



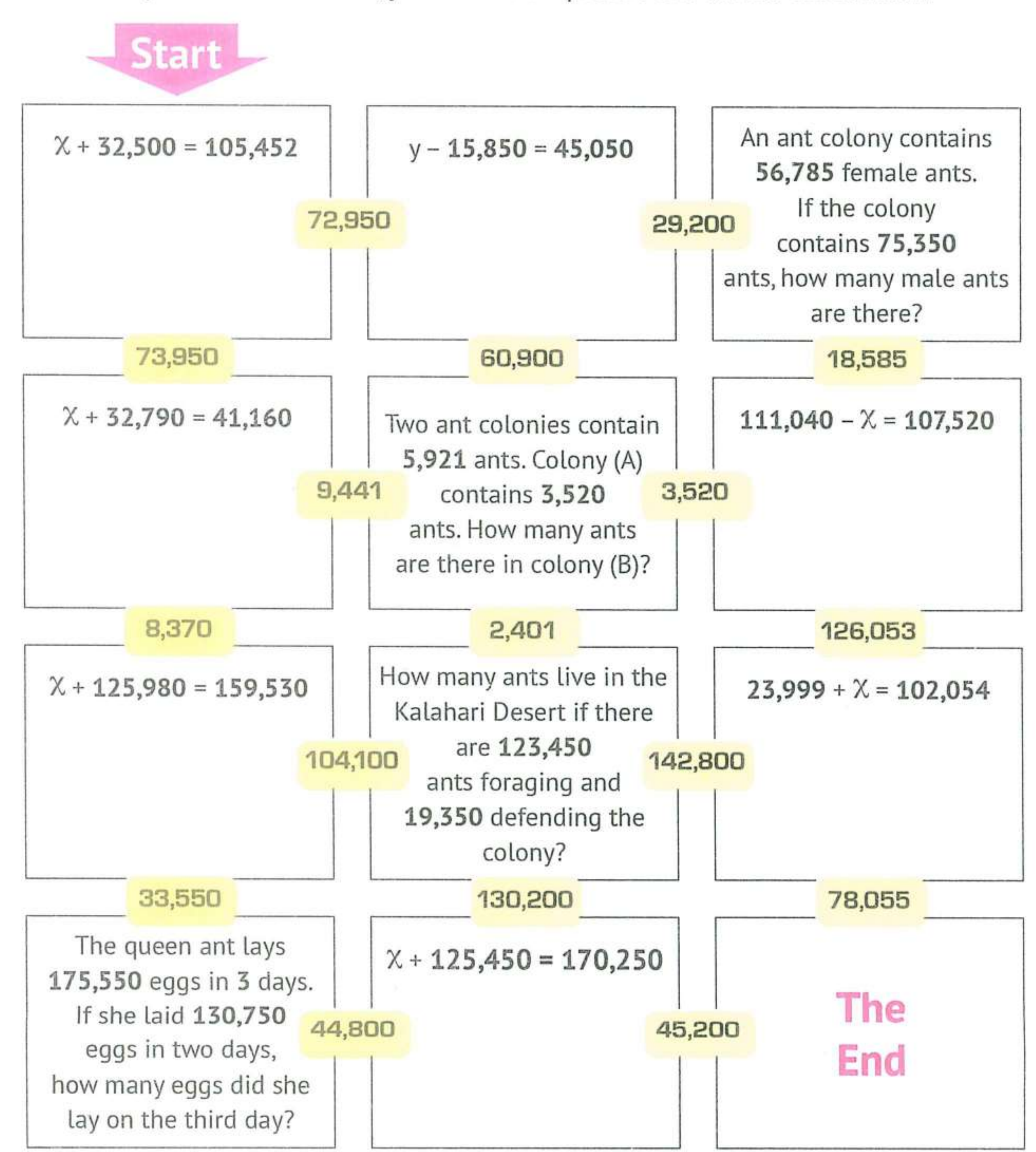
Solution: ....

The Maze

Your goal is to complete the game from the "Start" to the "End".

Start the game from the **"Start"** sign.

To move to the next space in the game, the number in the path must be a solution to the space you are in. Use the arrows to show the path you took. When you reach the end, you have completed the maze. **Good Luck!**



Unit 3 Concepts of Measurement

Concept 3.1 Metric Measurement

Exercises on Lesson 1

Ant Travel (Units of Length)

1 Choose the best unit for measuring each of the following:

a) An insect length: ....

(Kilometers or Meters or Centimeters or Millimeters)

b) Pencil length: ....

(Kilometers or Meters or Centimeters or Millimeters)

c) Home height: ....

(Kilometers or Meters or Centimeters or Millimeters)

d) The distance between Cairo and Tanta: ....

(Kilometers or Meters or Centimeters or Millimeters)

e) Ant length: ....

(Kilometers or Meters or Centimeters or Millimeters)

f) Child's height: ....

(Kilometers or Meters or Centimeters or Millimeters)

g) The distance between home and school: ....

(Kilometers or Meters or Centimeters or Millimeters)

h) School height: ....

(Kilometers or Meters or Centimeters or Millimeters)

i) Banana length: ....

(Kilometers or Meters or Centimeters or Millimeters)

ⓙ Class length: ....

(Kilometers or Meters or Centimeters or Millimeters)

ⓚ Window width: ....

(Kilometers or Meters or Centimeters or Millimeters)

2 Complete each of the following tables:

ⓐ

Kilometer	Meter
8	....
12	....
250	....
....	2,000
....	30,000
....	650,000
90	....
....	600,000
100	....

ⓑ

Meter	Centimeter
2	....
15	....
258	....
....	800
....	2,000
....	10,000
20	....
....	4,200
1,000	....

ⓒ

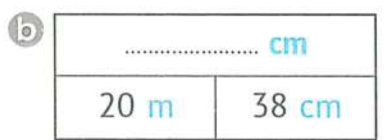
Meter	Decimeter
4	....
20	....
12	....
....	60
....	200
....	150
100	....
....	10,000
450	....

3 Complete the Bar Models to convert lengths units:

ⓐ

.... cm	
5 m	25 cm

ⓑ



.... cm	
20 m	38 cm

ⓒ

.... cm	
30 m	5 cm

ⓓ

.... m	
8 km	550 m

ⓔ

.... m	
10 km	35 m

ⓕ

.... m	
20 km	7 m

ⓖ

574 cm	
.... m	.... cm

ⓗ

7,050 cm	
.... m	.... cm

ⓘ

60,250 cm	
.... m	.... cm

ⓙ

1,258 m	
.... km	.... m

ⓚ

20,240 m	
.... km	.... m

ⓛ

65,005 m	
.... km	.... m

ⓜ

405 cm	
.... cm	.... dm

ⓝ

825 mm	
.... cm	.... mm

ⓞ

220 cm	
.... m	.... dm

4 Complete the following:

ⓐ 7 m, 45 cm = ... cm.

ⓑ 9 m, 2 cm = ... cm.

ⓒ 20 m, 8 cm = ... cm.

ⓓ 50 m, 90 cm = ... cm.

ⓔ 8 km, 750 m = ... m.

ⓕ 80 km, 60 m = ... m.

ⓖ 40 km, 7 m = ... m.

ⓗ 5 m, 5 dm = ... dm.

ⓘ 6 cm, 7 mm = ... mm.

ⓙ 8 dm, 4 cm = ... cm.

ⓚ 860 cm = ... m, ... cm.

ⓛ 504 cm = ... m, ... cm.

ⓜ 5,065 cm = ... m, ... cm.

ⓝ 21,050 cm = ... m, ... cm.

ⓞ 2,745 m = ... km, ... m.

ⓟ 71,025 m = ... km, ... m.

ⓠ 12,500 m = ... km, ... m.

ⓡ 725 dm = ... m, ... dm.

ⓢ 108 mm = ... cm, ... mm.

ⓣ 155 cm = ... dm, ... cm.

5 Choose the correct answer:

a) The best unit for measuring the **length** of an eraser is ....

(millimeter or centimeter or meter)

b) 70 m = ... cm. (7 or 700 or 7,000)

c) 8,000 m = ... km. (8 or 80 or 800)

d) 50 km + 20 m = ... m. (5,020 or 520,000 or 50,020)

e) 50 m + 5 dm = ... cm. (505 or 5,050 or 550)

f) 30,000 dm = ... m. (3,000 or 300 or 30)

g) 6,000 cm .... 600 m. (< or = or >)

h) 5,000 m .... 50 km. (< or = or >)

i) 2 m + 25 cm .... 22 dm + 5 cm. (< or = or >)

6 When the scientists poured cement in the ant colony and dug inside it, they found that the colony was 8 m deep.

How many centimeters is the depth of the ant colony?

....

7 Ants in a colony transported 40 tons of soil while building their house, and this was done in billions of trips. Each ant carried a portion of the soil to the surface. The weight of what an ant carried is 4 times its own weight.

This means that each ant carried what it was carrying up to a kilometer to the surface.

If each ant could move 10 loads of soil in a week, How much is this in kilometers, meters, and centimeters?

.... km = ... m = ... cm.

8 The height of a school building is 25 m. What is the height of the building in decimeters, centimeters and millimeters?

25 m = ... Decimeter = ... centimeter = ... millimeter.

9 If one black ant can walk 250 meters in one hour.

How many hours will it take to walk 1 kilometer?

....

Worksheet 1

1 Choose the correct answer from the brackets:

ⓐ The best unit for measuring the **length** of a school bus is ....

(meters or centimeters or kilometers)

ⓑ **Dekagram** is a measurement units of ....

(height or mass or capacity)

ⓒ 250 million, 50 thousand and 5 = ... **(in Standard Form)**

(250,055,000 or 250,500,005 or 250,050,005)

ⓓ 200,000 cm = ... (2 km or 20 m or 200 dm)

ⓔ 45 + 98 = ... + 100. (47 or 50 or 43)

2 Complete each of the following:

ⓐ 40 km, 25 m = ... m + ... m = ... m.

ⓑ 9,570 cm = ... m + ... cm.

ⓒ A **liter** is a unit of measurement of ....

ⓓ The place value of the digit 8 in the number **8**,417,216,234 is ....

ⓔ The number 54,625 ≈ .... *(To the nearest 100)*

3 Complete using (< , = or >):

ⓐ 4,589,465 4,958,456 ⓑ 4,500 cm 450 m

ⓒ 50,025 m 5 km, 25 m ⓓ 56 + 30 54 + 28

ⓔ (5 X 100,000,000) + (2 X 100) + (7 X 1) 500,000,000+ 200 + 7

4 Arrange the following numbers in an ascending order:

25 m , 1,500 cm , 2 km , 2,000 dm

The order: .... , ... , ... , ...

5 The distance between Samah's house and her school is 2 km. What is the distance in meters, decimeters, and centimeters?

2 km = ... m = ... dm = ... cm.

Exercises on Lesson 2

The Weight Can Wait (Measuring Mass)

1 Choose the best unit for measuring the mass of each of the following (gram or kilogram):

a) A book. (..........)

b) A pen. (..........)

c) A rabbit. (..........)

d) A car. (..........)

e) A ring. (..........)

f) A chair. (..........)

2 Complete each of the following tables:

a)

Kilogram	Gram
5	....
70	....
200	....
....	8,000
....	12,000
....	258,000

b)

Gram	Kilogram
9,000	....
30,000	....
500,000	....
....	7
....	34
....	126

3 Complete the Bar Models to convert between mass units:

a)

.... gram	
5 kg	200 gm

b)

.... gram	
8 kg	7 gm

c)

.... gram	
15 kg	15 gm

d)

.... gram	
20 kg	200 gm

(e)

3,250 gram	
.... kg	.... gm

(f)

60,024 gram	
.... kg	.... gm

(g)

200,060 gram	
.... kg	.... gm

(h)

10,006 gram	
.... kg	.... gm

4 Complete each of the following:

(a) 4 **kilograms** = ... **grams.**

(b) 20 **kilograms** = ... **grams.**

(c) 300 **kilograms** = ... **grams.**

(d) 680 **kilograms** = ... **grams.**

(e) 3,000 **grams** = ... **kilograms.**

(f) 90,000 **grams** = ... **kilograms.**

(g) 600,000 **grams** = ... **kilograms.**

(h) 905,000 **grams** = ... **kilograms.**

(i) 3,250 **gm** = ... **kg,** .... **gm.**

(j) 24,120 **gm** = ... **kg,** .... **gm.**

(k) 30,020 **gm** = ... **kg,** .... **gm.**

(l) 300,008 **gm** = ... **kg,** .... **gm.**

(m) 3 kg, 245 **gm** = ... **gm.**

(n) 15 **kg,** 20 **gm** = ... **gm.**

(o) 12 kg, 150 **gm** = ... **gm.**

(p) 20 **kg,** 100 **gm** = ... **gm.**

5 Choose the correct answer:

(a) .... is a unit of mass measurement. (Gram or Meter or Liter)

(b) The **gram** is the best unit for measuring the mass of a .... (ring or child or car)

(c) 40 **kilograms** = ... **grams.** (400 or 4,000 or 40,000)

(d) 200 **kilograms** = ... **grams.** (200,000 or 20,000 or 2,000)

e) 60,000 grams = ... kg. (6 or 60 or 600)

f) 3,000 grams = ... kg. (3 or 30 or 300)

g) 20 kg, 50 g = ... grams. (250,000 or 2,050 or 20,050)

h) 10 kg, 300 g = ... grams. (10,300 or 1,300 or 103,000)

6 Hassan has a cow that weighs 125 kilograms and 350 grams.

Rewrite the weight in grams.

....

....

....

7 The total weight of all ants on Earth equals the total weight of all humans. One ant colony weighs 3,493 grams.

Rewrite this number using kilograms and grams.

....

....

....

8 Ahmed bought 5 kilograms and 200 grams of oranges, and Adam bought 8 kilograms of oranges.

Rewrite these weights in grams and then find the sum of the weight of what Ahmed and Adam bought.

....

....

....

Worksheet 2

1 Choose the correct answer:

ⓐ .... is a unit of **mass** measurement.
(kiloliter or kilometer or kilogram)

ⓑ The **kilogram** is the best unit for measuring the mass of a ....
(balloon or pencil or desk)

ⓒ 50,000 grams = ... kg. (50 or 500 or 5,000)

ⓓ 30 kg + 125 g = ... gm. (3,125 or 31,250 or 30,125)

ⓔ The value of the digit 5 in the **Ten-thousands** place is ....
(500,000 or 50,000 or 5,000)

2 Complete each of the following:

ⓐ The **largest** 7-digit-number is ....

ⓑ 5,000 + 0 + 0 + 0 + 4 = ...

ⓒ 56,240 grams = ... kg, ... g.

ⓓ 310,205 **(in Expanded Notation)** = ...
....

ⓔ The number that comes right **after** 999,999 is ....

3 Complete using (< , = or >):

ⓐ 20 kg ☐ 2,000 g.

ⓑ The mass of a rabbit ☐ the mass of a car.

ⓒ 7,306,820 ☐ 7,368,200. ⓓ 2,500 dm ☐ 250 m.

ⓔ 3,000,050,003 ☐ 3 billion, 50 thousand, 3.

4 Ahmed bought 4 kilograms and 300 grams of oranges, 3 kilograms of apples and 900 grams of strawberries. Rewrite these weights in grams and then find the sum of the weight of what Ahmed bought.

....

Exercises on Lesson 3

Fill It Up (Volume/Capacity)

1 Choose the best unit for measuring the capacity of each of the following (liters or milliliters):

a) A water cup. (..................)

b) A swimming pool. (..................)

c) A spoon filled with medicine. (..................)

d) A car's fuel tank. (..................)

e) A family juice box. (..................)

f) A perfume bottle. (..................)

2 Complete each of the following tables:

a)

Liter	Milliliter
5	....
70	....
800	....
....	3,000
....	35,000
....	143,000

b)

Milliliter	Liter
2,000	....
60,000	....
900,000	....
....	7
....	15
....	221

3 Complete the Bar Models to convert the following volume units:

a)

.... ml	
3 l	450 ml

b)

.... ml	
12 l	50 ml

c)

.... ml	
20 l	8 ml

d)

.... ml	
12 l	500 ml

(e)

8,056 ml	
.... l	.... ml

(f)

31,500 ml	
.... l	.... ml

(g)

40,003 ml	
.... l	.... ml

(h)

6,070 ml	
.... l	.... ml

4 Complete each of the following:

(a) 3 **liters** = ... **milliliters.**

(b) 50 **liters** = ... **milliliters.**

(c) 16 **liters** = ... **milliliters.**

(d) 20 **liters** = ... **milliliters.**

(e) 7,000 **milliliters** = ... **liters.**

(f) 80,000 **milliliters** = ... **liters.**

(g) 15,000 **milliliters** = ... **liters.**

(h) 200,000 **milliliters** = ... **liters.**

(i) 8,020 **milliliters** = ... **liters,** .... **milliliters.**

(j) 20,050 **milliliters** = ... **liters,** .... **milliliters.**

(k) 100,009 **milliliters** = ... **liters,** .... **milliliters.**

(l) 10,016 **milliliters** = ... **liters,** .... **milliliters.**

(m) 3 **liters,** 500 **milliliters** = ... **milliliters.**

(n) 20 **liters,** 40 **milliliters** = ... **milliliters.**

(o) 12 **liters,** 9 **milliliters** = ... **milliliters.**

5 Choose the correct answer:

(a) .... is the best unit for measuring the **capacity** of a **cup of tea.**

(Milliliter or Liter or Centimeter)

(b) The **kiloliter** is a unit of measurement of ....

(capacity or mass or length)

c. 20 liters = ... milliliters. (2,000 or 20,000 or 200,000)

d. 100 liters = ... milliliters. (1,000 or 10,000 or 100,000)

e. 5,000 milliliters = ... liters. (5 or 50 or 500)

f. 300,000 milliliters = ... liters. (3 or 30 or 300)

g. 45 liters + 45 milliliters = ... milliliters. (4,545 or 45,450 or 45,045)

h. 60 liters + 6 milliliters = ... milliliters. (606 or 60,006 or 60,060)

6 **The fish tank can be filled with 50 liters of water. If the tank contains 35 liters and 130 milliliters.**

– How much water do we need to fill the tank?

50 liters = ... milliliters.

35 liters, 130 milliliters = ... milliliters.

– Amount of water needed = ...

7 **Essam has 4 liters and 250 milliliters of sunflower oil, and he also has one liter and 50 milliliters of corn oil.**

– How much oil does Issam have?

4 liters, 250 milliliters = ... milliliters.

Liters, 50 milliliters = ... milliliters.

– Amount of oil = ...

8 **A water tank contains 500 liters of water. A family used 125 liters and 500 milliliters on one day and used 250 liters and 600 milliliters the next day. How much water is left in the tank?**

– Use the following **Bar Model** to solve:

500 liters = ... milliliters		
125 l , 500 ml = ... ml	250 l , 600 ml = ... ml	.... ml

– Amount of water left = ...

Worksheet 3

1 Choose the correct answer:

ⓐ A billion is the **smallest** number formed from .... digits.

(7 or 9 or 10)

ⓑ 50 liters = ... milliliters. (5,000 or 50,000 or 500,000)

ⓒ 14 liters, 14 milliliters = ... milliliters.

(1,414 or 14,140 or 14,014)

ⓓ 50,000 milliliters .... 5 liters. (< or = or >)

ⓔ The number 75,499 is rounded to the nearest **1,000** ≈ ....

(76,000 or 75,000 or 74,000)

2 Complete each of the following:

ⓐ 80,000,000 + 8,000,000 + 8,000 + 8 = ... **(in Standard Form)**

ⓑ 20,250 milliliters = ... liters, ... milliliters.

ⓒ 2,050 milliliters = ... centimeters, ... millimeters.

ⓓ If: $\chi - 45 = 15$, then χ = ...

ⓔ 50 kg, 20 grams = ... grams.

3 Find the result:

ⓐ 23,456 + 64,247 = ...

ⓑ 65,754 − 37,244 = ...

ⓒ 45,565 + 54,435 = ...

ⓓ 80,000 − 24,000 = ...

4 Arrange the following numbers in a descending order:

500,500 , 5,500,000 , 500,005 , 5,050,000

The order: .... , ... , ... , ...

5 A bottle contains two liters of juice. Adel drank 660 milliliters of it. How much juice is left in the bottle?

....

Measurement and Unit Conversions

1 Complete the following table:

Kilometer	Hectometer	Dekameter	Meter	Decimeter	Centimeter	Millimeter
....	....	....	5,000	....	....	....
9	....	....	....	....	....	....
....	....	....	....	....	....	2,000,000,000

2 Complete the following table:

Kilogram	Hectogram	Dekagram	Gram	Decigram	Centigram	Milligram
....	10	....	....	....	....	....
....	....	800	....	....	....	....
....	....	....	....	....	1,000,000	....

3 Complete the following table:

Kiloliter	Hectoliter	Dekaliter	Liter	Deciliter	Centiliter	Milliliter
....	....	....	....	600,000	....	....
7	....	....	....	....	....	....
....	....	5,000	....	....	....	....

4 Convert between units of measurement using multiplication or division:

a	8 meters	.... X	.... centimeters
b	2,000 centimeters	.... ÷	.... meters
c	50 meters	....	.... centimeters
d	20 kilometers	....	.... hectometers
e	30 dekameters	....	.... hectometers
f	500 decimeters	....	.... Meters
g	5,000 millimeters	....	.... Centimeters
h	20,000 grams	....	.... Decigrams
i	500 grams	....	.... Dekagrams
j	500 centigrams	....	.... Milligrams
k	200 hectograms	....	.... Dekagrams
l	400 hectograms	....	.... Kilograms
m	9,000 grams	....	.... Kilograms
n	12 liters	....	.... milliliters
o	25 liters	....	.... Deciliters
p	400 liters	....	.... Dekaliters
q	5 kiloliters	....	.... Hectoliters
r	500 centiliters	....	.... Deciliters
s	200 milliliters	....	.... deciliters

5 Complete the following:

a 12 meters = ... **decimeters** = ... **centimeters.**

b 1,000 meters = ... **dekameters** = ... **hectometers.**

c 3 kilometers = ... **hectometers** = ... **tetrameters.**

(d) 500 millimeters = ... centimeters = ... decimeters.

(e) 35 grams = ... decigrams = ... centigrams.

(f) 2,000 grams = ... dekagrams = ... hectograms.

(g) 7 kg = ... hectograms = ... dekagrams.

(h) 600 milligrams = ... centigrams = ... decigrams.

(i) 30 liters = ... deciliters = ... centiliters.

(j) 9,000 liters = ... dekaliters = ... hectoliters.

(k) 11 kiloliters = ... hectoliters = ... dekaliters.

(l) 7,000 milliliters = ... centiliters = ... deciliters.

6 An ant walked 8 meters from its ant house to search for food.

What is the distance travelled in centimeters?

....

7 A colony of army ants is known to consume 6 decigrams of food in one day.

How many grams of food does the colony consume?

....

8 Two hundred thousand ants drink one liter of water.

How many milliliters of water do ants drink?

....

9 The height of a school building is 15 meters.

What is the height of the school building in millimeters?

....

10 A person needs about 4 liters of water per day.

How many milliliters of water a person needs per day?

....

Worksheet 4

1 Complete each of the following:

ⓐ 15 dekaliters = ... liters.

ⓑ 20,000,000+ 600,000 + 50,000+ 60 + 5 **(in Word Form)**

....

ⓒ The digit in the **Hundred-millions** place in the number: 7,910,684,325 is ....

ⓓ 64,079 (rounded to the nearest ....) ≈ 64,000.

ⓔ The number that comes right **before** 9,000,000 is ....

2 Choose the correct answer:

ⓐ 200,000 meters = ... hectometers. (200 or 2,000 or 20,000)

ⓑ (5 X 100,000,000) + (5 X 1,000,000) + (5 X 1,000) + (5 X 1) **(in Standard Form)** = ... (505,005,005 or 50,505,505 or 550,005,005)

ⓒ 4 kiloliters and 200 liters = ... liters. (400,200 or 40,200 or 4,200)

ⓓ The **largest** number that can be formed from the digits: (5, 3, 4, 7, 0, 6) is .... (764,503 or 305,467 or 765,430)

ⓔ 50 hectograms = ... dekagrams. (5 or 50 or 500)

3 Complete using (< , = or >):

ⓐ 2,000 centiliters. ☐ 20 dekaliters.

ⓑ 100,000 grams. ☐ 100 kilograms.

ⓒ 2,000,000 decimeters. ☐ 200 hectometers.

ⓓ 2 liters. ☐ 2,000 milliliters.

4 Find the result:

ⓐ 21,456 + 35,144 = ... ⓑ 41,047 – 20,500 = ...

5 If the weight of Hala is 65 kg and 250 grams. What is the weight of Hala in grams?

....

Concept 3.2 Evaluate Time and Scaled Measurement

Exercises on Lessons 5&6

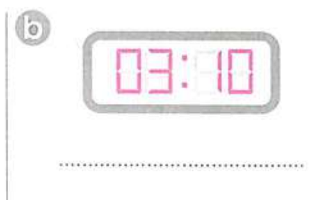
What Time Is It? & How Long Does It Take?

1 Write the time shown on the digital clock and draw the hands of the analog clock:

ⓐ 02:45

....

....

ⓑ 

....

....

ⓒ

....

....

ⓓ

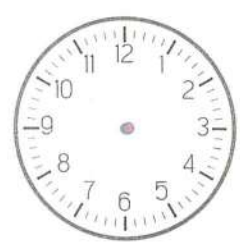
....

....

ⓔ

....

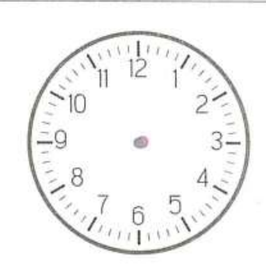
....



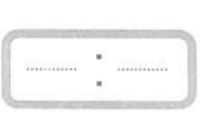
ⓕ

....

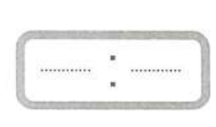
....



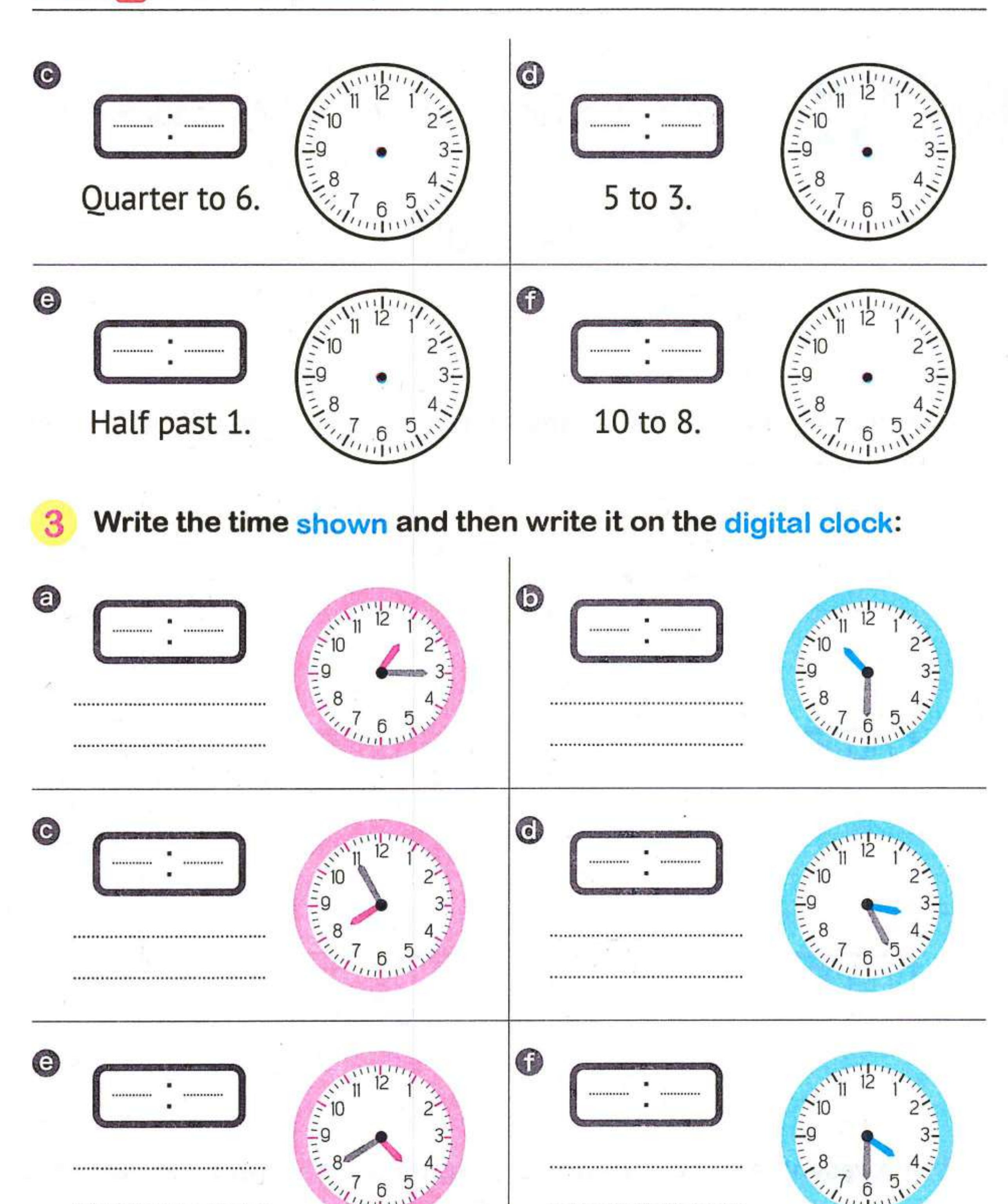
2 Represent the time shown on the digital clock and the analog clock:

ⓐ 

20 past 9.

ⓑ 

25 past 8.



c) Quarter to 6.

d) 5 to 3.

e) Half past 1.

f) 10 to 8.

3 Write the time shown and then write it on the digital clock:

a)

b)

c)

d)

e)

f)

4 Complete the following time ratio tables:

ⓐ X 7

Weeks	Days
1	....
2	....
3	....
4	....
5	....
6	....
7	....
8	....
9	....
10	....

ⓑ X 24

Days	Hours
1	....
2	....
3	....
4	....
5	....
6	....
7	....
8	....
9	....
10	....

ⓒ X 60

Hours	Minutes
1	....
2	....
3	....
4	....
5	....
6	....
7	....
8	....
9	....
10	....

ⓓ X 60

Minutes	Seconds
1	....
2	....
3	....
4	....
5	....
6	....
7	....
8	....
9	....
10	....

5 Solve the following conversion problems.

(Use the previous **time ratio tables**):

ⓐ One **week** and three **days** = ... **days** + ... **days** = ... **days.**

ⓑ 4 **weeks** and 5 **days** = ... **days** + ... **days** = ... **days.**

ⓒ 2 **weeks** and 6 **days** = ... + ... = ... **days.**

ⓓ 1 **day** and 8 **hours** = ... **hours** + ... **hours** = ... **hours.**

ⓔ 2 **days** and 20 **hours** = ... + ... = ... **hours.**

ⓕ 3 **days** and 10 **hours**= .... + ... = ... **hours.**

ⓖ 3 **hours** and 40 **minutes** = ... **minutes** + ... **minutes** = ... **minutes.**

ⓗ 2 **hours** and 10 **minutes** = ... + ... = ... **minutes.**

i) 1 **hour** and 25 **minutes** = ... + ... = ... **minutes.**

j) 3 **minutes** and 50 **seconds** = ... **seconds** + ... **seconds** = ... **seconds.**

k) 10 **minutes** and 15 **seconds** = ... + ... = ... **seconds.**

l) 2 **minutes** and 3 **seconds** = ... + ... = ... **seconds.**

6 **Solve the following conversion problems.**
(Use the previous time ratio tables):

a) 25 **days** = ... weeks and .... **days.**

b) 36 **days** = ... weeks and .... **days.**

c) 48 **days** = ... weeks and .... **days.**

d) 29 **hours** = ... days and .... **hours.**

e) 60 **hours** = ... days and .... **hours.**

f) 250 **hours** = ... days and .... **hours.**

g) 95 **minutes** = ... hours and .... **minutes.**

h) 200 **minutes** = ... hours and .... **minutes.**

i) 560 **minutes** = ... hours and .... **minutes.**

j) 65 **seconds** = ... minutes and .... **seconds.**

k) 195 **seconds** = ... minutes and .... **seconds.**

l) 380 **seconds** = ... minutes and .... **seconds.**

7 **Find the result of each of the following:**

a) Hours : Minutes	b) Hours : Minutes	c) Hours : Minutes	d) Hours : Minutes
7 : 36	2 : 27	6 : 39	4 : 35
+ 3 : 45	+ 5 : 37	+ 2 : 50	+ 4 : 45
.... :	.... :	.... :	.... : ....

e) Hours : Minutes	f) Hours : Minutes	g) Hours : Minutes	h) Hours : Minutes
5 : 47	2 : 38	6 : 00	10 : 14
+ 2 : 30	+ 6 : 36	− 4 : 39	− 6 : 46
.... :	.... :	.... :	.... : ....

(i) Hours : Minutes	(j) Hours : Minutes	(k) Hours : Minutes	(l) Hours : Minutes
7 : 20	4 : 00	4 : 05	11 : 15
− 6 : 30	− 1 : 15	− 1 : 40	− 00 : 50
.... :	.... :	.... :	.... : ....

(m) 6 : 27 + 3 : 24 = ... : ....

(n) 8 : 24 + 1 : 36 = ... : ....

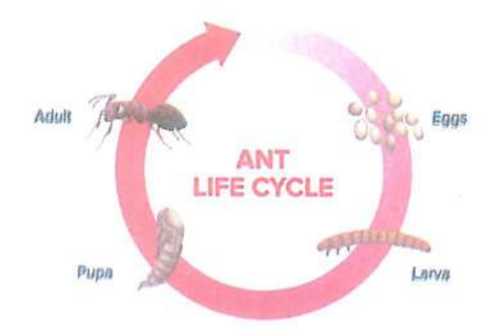
(o) 2 : 25 + 4 : 45 = ... : ....

(p) 9 : 05 − 3 : 48 = ... : ....

(q) 6 : 45 − 4 : 35 = ... : ....

(r) 8 : 10 − 7 : 40 = ... : ....

8 **Use the life cycle of an ant to answer the following questions:**



(a) After a queen ant lays eggs, it can take 7 to 14 days for the eggs to hatch and turn into the larva stage. If it takes 10 days for the eggs of an ant to hatch, how many hours is this?

....

(b) Adult ants feed larvae with liquids and solid food that helps them grow quickly. Most ants move to the next stage, the pupa (virgin), within 6 to 12 days. If the larval stage took 6 days and 13 hours, how many hours did it take?

....

(c) The pupa (virgin) is white in color and resembles an adult ant with its legs and antennae folded and covered with a white or brown cocoon. It transforms into an adult ant within 9 to 30 days. If it takes 21 days for the pupa to become an adult, how many weeks will it take?

....

(d) Ant workers work on average about 19 hours a day.
How many hours do ants work for three days?

....

....

(e) Ant workers take 240 naps per day. Each nap lasts one minute.
How many hours do ants take for naps?

....

....

9 **Amir's family used their computer for 3 hours on Saturday, 3 hours on Sunday and 5 hours on Monday.**
How many minutes have they used the computer?

....

....

10 **It takes Dahlia 2 hours and 15 minutes to drive to her grandmother's house. How many minutes does she take to drive?**

....

....

11 **Farah was training for the marathon. Her goal was to run for 1 hour and 30 minutes. If she starts running at 8:35 a.m, when will she finish running?**

....

....

12 **The worker ants went out to find food for the colony.**
The workers left at 6:30 am and returned at 7:42 am.
How long did the worker ants take to search for food?

....

....

Worksheet 5

1 Choose the correct answer:

ⓐ (4 + 5) + 7 = 4 + (5 + 7) (.................... Property)

(Associative or Neutral Element or Commutative)

ⓑ The number .... comes right **before** 3,000,100.

(2,999,999 or 3,000,990 or 3,000,099)

ⓒ 2 days and 2 hours = ... hours. (26 or 122 or 50)

ⓓ The **smallest** odd number formed from 7 different digits is ....

(1,000,003 or 6,543,201 or 1,023,465)

ⓔ 20 dekameters = ... meters. (2 or 200 or 2,000)

2 Complete the following:

ⓐ 3 : 45 + 2 : 15 = ... : .... = ...

ⓑ 10 minutes and 10 seconds = ... seconds.

ⓒ The value of the digit 5 in the **Ten-thousands** place = ...
times the digit 5 in the **Hundreds place.**

ⓓ 325,215 + 125,247 = ...

ⓔ 39 days = ... weeks, ... days.

3 Draw the hands of the analog clock to represent the time shown:

ⓐ 10 past 4

ⓑ 10 to 8

ⓒ Half past 2

4 Salma trains to swim for an hour and 15 minutes.

If she starts training at 5:35, when will Salma finish training?

....

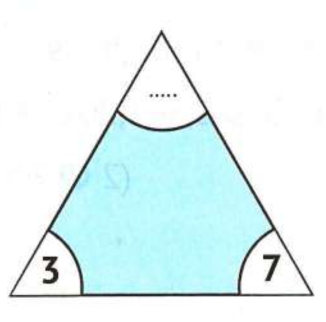
Concept 3.3 Measurement All Around

Exercises on Lessons 7, 8 & 9

Scaled Measurement & Measuring the World Around Me

1 Complete the triangle of Division and Multiplication Facts:

ⓐ



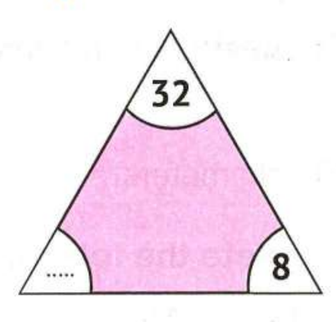
.... × .... = ...

.... × .... = ...

.... ÷ .... = ...

.... ÷ .... = ...

ⓑ



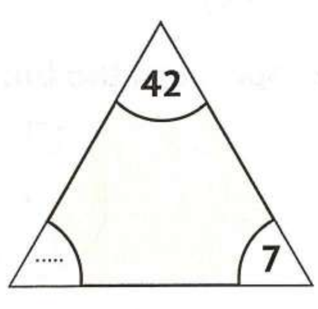
.... × .... = ...

.... × .... = ...

.... ÷ .... = ...

.... ÷ .... = ...

ⓒ



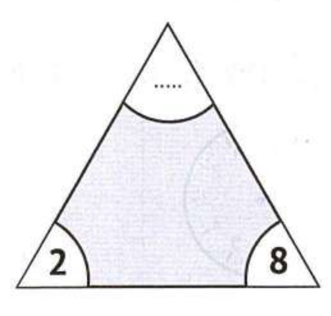
.... × .... = ...

.... × .... = ...

.... ÷ .... = ...

.... ÷ .... = ...

ⓓ



.... × .... = ...

.... × .... = ...

.... ÷ .... = ...

.... ÷ .... = ...

2 **Look at the table that lists the size of a variety of ants around the world. Use it to answer the following questions:**

Ant type	Size (mm)	Ant type	Size (mm)
Ghost Ants	1	Army Ants	3
Thief Ants	2	Black Garden Ants	4
Pharaonic Ants	2	Red Harvester Ants	6
Argentine Ants	3	Ant Warrior	7
Fire Ants	4	Wood Ants	9
Sugar Ants	5	The ant with the jaws of the trap	9
Crazy Ants	3	Panda Ants	8
African Ants	10	Dinosaur Ants	10
Sidewalk Ants	3	Leaf-cutter Ants	10

a **Draw a Line Plot to show the measurement data.**
Remember to include a title and key:

....

....

X = ...

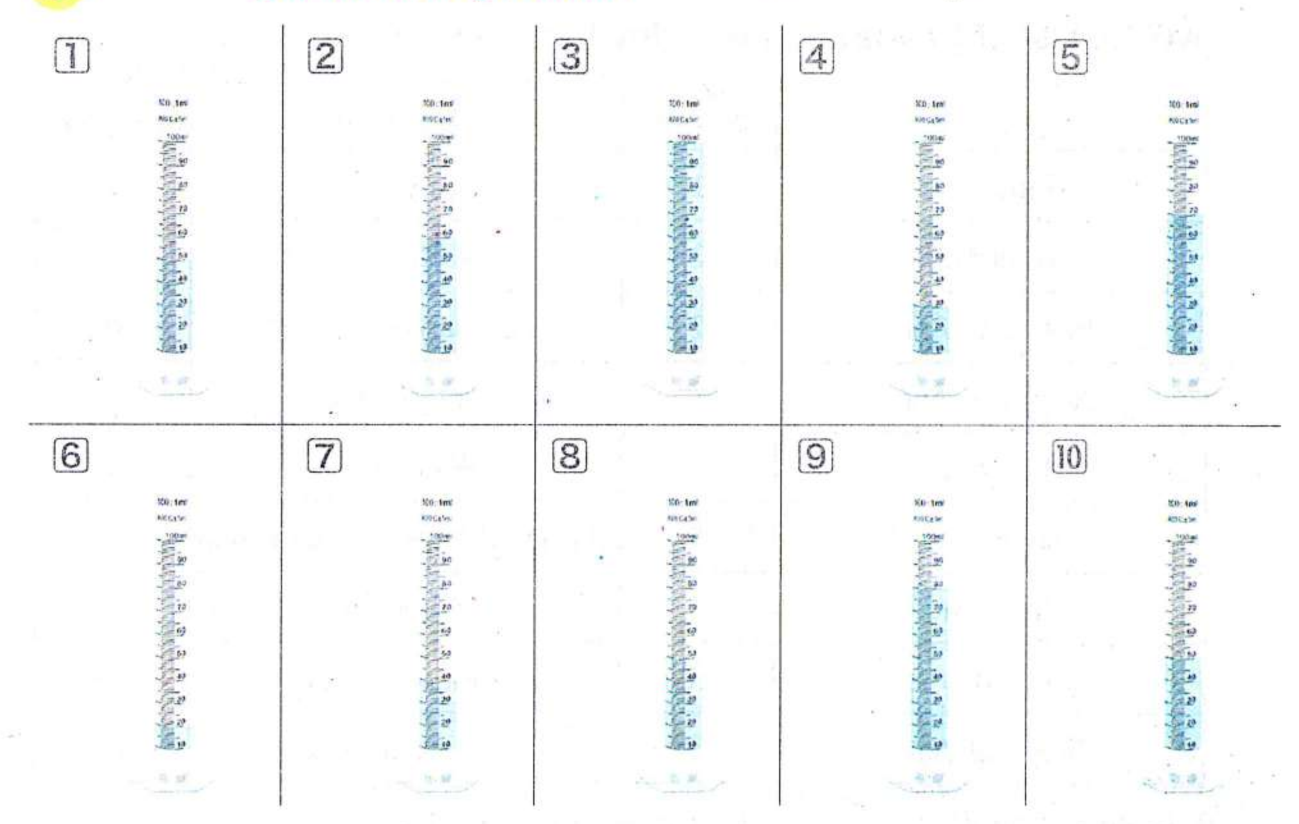
b .... ant is the **smallest** species in size.

c The **most common** size among ant species is .... mm.

d The **least common** size among ant species is .... mm.

e How many types of ants are 10 mm in size? ....

3 Look at graduated cylinders then answer the questions:



a Complete the following table:

Graduated cylinder	1	2	3	4	5	6	7	8	9	10
Volume of Liquid in Milliliters	....	....	....	....	....	....	....	....	....	....

b Draw a Line Plot to show the measurement data.
Remember to include a title and key:

....

←――――――――――――――――――――→

....

X = ...

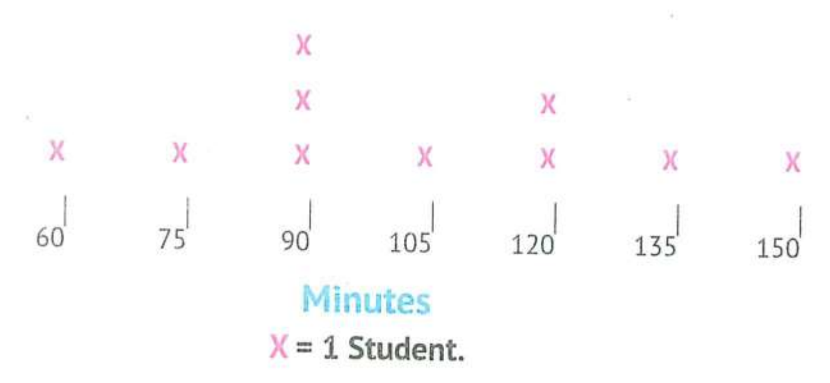
c Answer the following:

1. .... milliliter is the **most frequent** volume.
2. .... milliliter is the **least frequent** volume.

3. The number of graduated cylinders in which the liquid volume is **less than 50 milliliters** is ....
4. The number of graduated cylinders in which the liquid volume is **50 milliliters or more** is ....

4 Use the Line Plot to answer the following questions:

Number of Study Minutes



Minutes

X = 1 Student.

a. What is being measured? ....
b. What is the scale of a number line? ....
c. What is the **least time** students spend in studying? ....
d. What is the **maximum time** students spend in studying? ....
e. What is the **most common** amount of time students spend studying?

....

5 In the colony, the ants collect 950 grams of food. If the ants consumed 25 grams of food on Monday and 37 grams of food on Tuesday, how many grams of food are left?

....

6 Taher's height increased by 10 centimeters in one year. He is now 1 meter and 6 centimeters long.

How tall was Taher in centimeters one year ago?

....

7 An ant from a colony walked two kilometers in one day.

An ant from another colony walked 3,000 meters in one day.

Which of the two ants went the farthest? What is the difference in distance in kilometers?

....

....

8 Ali's cat weighs 7 kg and his dog weighs 17 kg. When Ali took them to the vet, he learned that his cat had gained 450 grams and his dog had gained 120 grams.

What is the total weight of the two Pets now?

....

....

9 Professor Emad bought four two-liter bottles of soda for a picnic for the fourth primary grade.

If at the end of the party there are 2 liters and 829 milliliters of soda left, how many milliliters of Soda did the students drink?

....

....

10 The worker ant takes short naps to replenish its energy up to 250 minutes a day and the queen ant can sleep up to 9 hours a day.

Which ant sleeps the longest and what is the difference between them?

....

....

11 Rania measures the length of two rows of ants. The row of ants of the first colony is 30 centimeters long.
The length of the row of ants of the second colony is 500 mm.
How long are the two rows of ants together in centimeters?

....

....

12 Dahlia's dog weighs 15 kilograms. When she took him to the vet, she knew that he gained 2,000 grams.
How many grams does Dahlia's dog need to weigh 20 kilograms?

....

....

13 Ms. Basma bought two cartons of milk, each of which weighs two liters.
Her three children drank 1,200 milliliters on Monday and 950 milliliters on Tuesday. How many milliliters of milk are left?

....

....

14 Ziad played video games from 3:45 pm to 5:10 pm, He is only allowed to play video games for 80 minutes. Did he break the rule? If the answer is no, why? If yes, how many extra minutes did he play?

....

....

15 Ahmed has a 12 meter long piece of wood. He wants to cut it into 3 equal lengths. How long should each piece be in meters? What is the length of each piece in centimeters?

....

....

16 Amany swims. She spends half an hour every day swimming.
How many minutes does she spend swimming in 5 days?

....

17 Sarah walked 5,000 meters every day for 9 days.
What is the total kilometers she walked?

....

18 Mary was on a picnic with her family and she counted 10 ants walking together. If each ant weighs 1 gram and carries a weight of 50 times its body weight. What is the total weight carried the ant?

....

19 Ants walk about 5,000 meters every day.
How many kilometers do ants walk in 6 days?

....

20 Samira is studying for the next Math test. If Samira studies for 30 minutes a day.
How many hours will she spend studying in 8 days?

....

21 In a colony of ant, ants eat approximately 2,000 grams of food every day. If ants have 10 kg of food stored. How many days do the ants need to consume this amount of food?

....

22 An ant can walk up to 5 km per day. If an ant keeps walking for 20 days.
What is the distance will it walk in meters?

....

Worksheet 6

1 Choose the correct answer:

a) The number 5,010,000 comes right **after** ....
(5,010,001 or 5,999,999 or 5,009,999)

b) The digit in the **Millions** place in the number 201,600,000 is .... (6 or 1 or 2)

c) 6 hours = ... minutes. (360 or 144 or 42)

d) .... are from the scales of gradation that we see in our daily lives. (Telephone or Tv or Watches)

e) Three million, thirty thousand, three hundred = ...
(in Standard Form) (3,030,300 or 3,300,300 or 3,003,300)

f) 8 + 12 = 12 + 8. (.................... *Property)*
(Commutative or Associative or Neutral element)

2 Complete the following:

a) 3 days and 3 hours = ... hours.

b) 195 minutes = ... hours, ... minutes.

c) (6 X 100,000,000) + (7 X 100,000) + (6 X 1,000) + (7 X 100) + (6 X 1)
= .... **(in Standard Form)**

d) 5 : 12 – 3 : 50 = ... : ....

e) The digit 3 in the **Ten-millions Place = 100 times** the digit 3 in the .... place.

3 Match:

1 2 days , 12 hours.
2 8 weeks , 4 days.
3 1 minute.
4 1 hour.

a) 60 days.
b) 60 minutes.
c) 60 hours.
d) 60 seconds.

4 Arrange the following numbers in an ascending order:

5,005,500 , 5,500,005 , 5,050,050 , 5,005,050

The order: .... , ... , ... , ...

Unit 4 Area and Perimeter

Concept 4.1 Exploring Area and Perimeter

Exercises on Lesson 1

Marching Ants (The Perimeter)

1 **Use two different formulas to solve each problem (Show your steps):**

ⓐ First Formula = ...

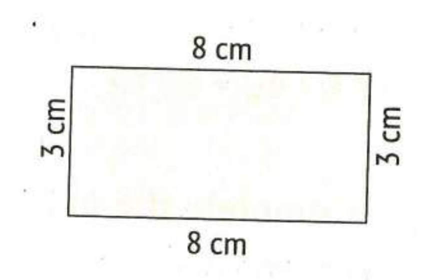
....

....

Second Formula = ...

....

....



ⓑ First Formula = ...

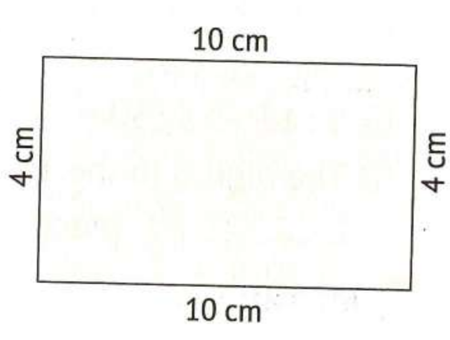
....

....

Second Formula = ...

....

....



ⓒ First Formula = ...

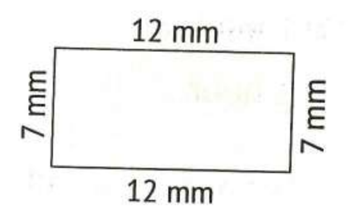
....

....

Second Formula = ...

....

....



(d) First Formula = ...

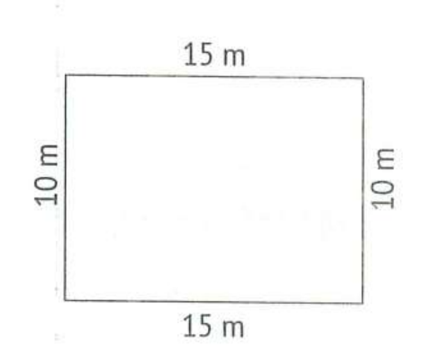
....

....

Second Formula = ...

....

....



(e) First Formula = ...

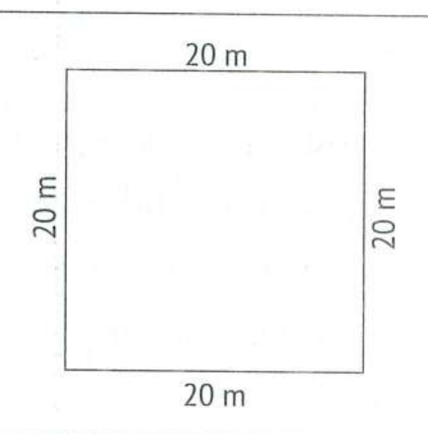
....

....

Second Formula = ...

....

....



(f) First Formula = ...

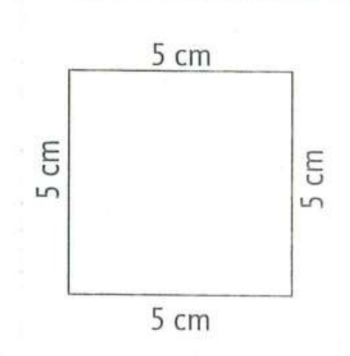
....

....

Second Formula = ...

....

....



(g) First Formula = ...

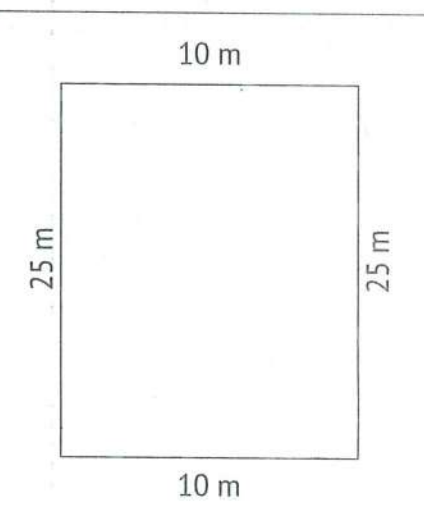
....

....

Second Formula = ...

....

....



(h) First Formula = ...

....

....

Second Formula = ...

....

....

30 mm
30 mm
30 mm
30 mm

2 Solve the following perimeter problems: For each problem, draw a rectangle and write the length and width according to the problem:

(a) A window is in the shape of a rectangle, with **60** cm length and **40** cm width. Find the perimeter of the window.

....

....

....

....

....

(b) A square table with a side length of **2 m**.

What is the perimeter of the table?

....

....

....

....

....

(c) Kamal owns a rectangular farm. It is 20 meters long and 8 meters wide. What is the perimeter of this farm?

....

....

....

....

....

(d) A square picture with a side length of 30 cm. What is the perimeter of the frame for this picture?

....

....

....

....

....

(e) The football team wants to surround part of the field with ropes to play football. To have enough space, they need a space that is 105 meters long and 68 meters wide. What is the length of the rope they would need for this part of the field?

....

....

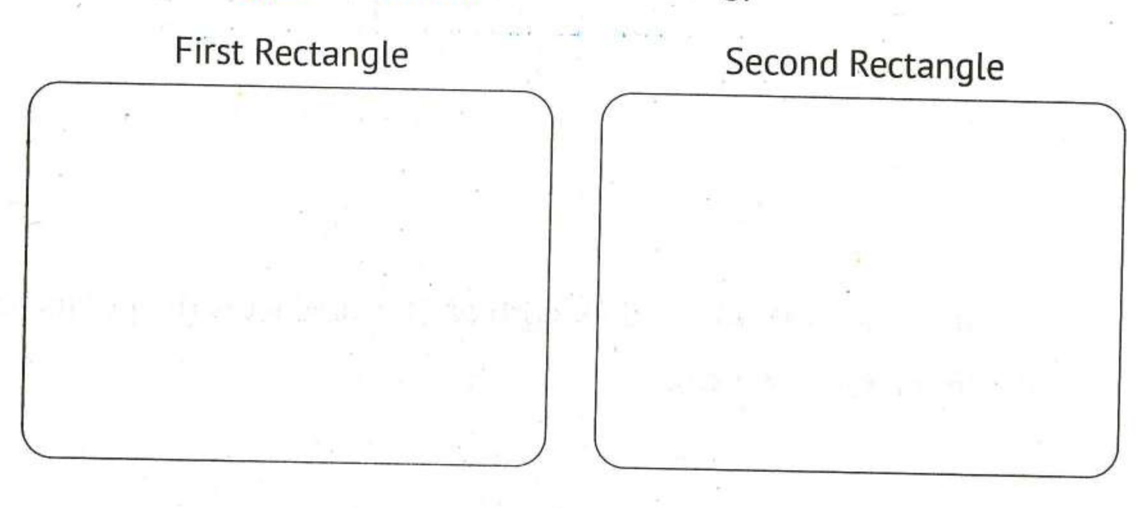
....

....

....

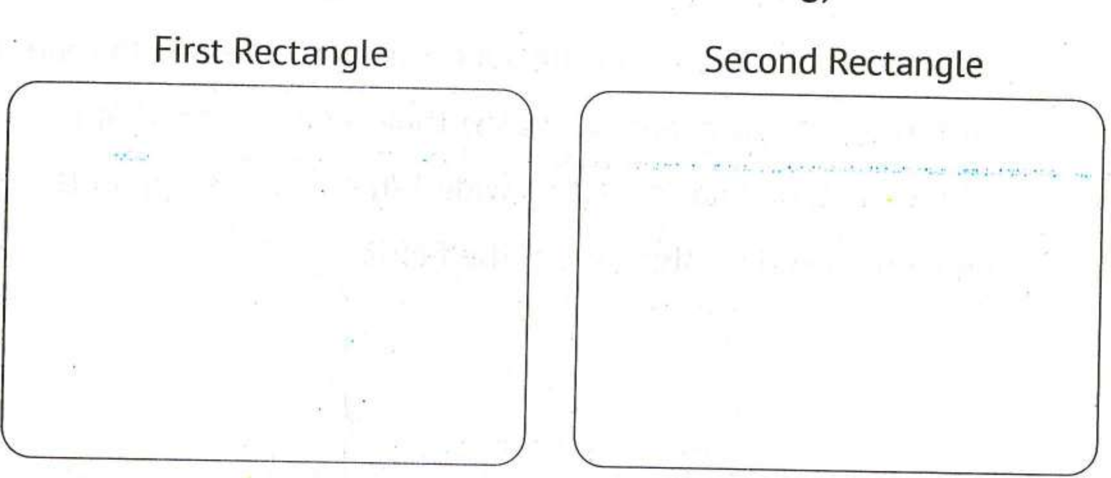
3 Ahmed practiced walking around a playground. He walked a distance of 120 m.

Draw two different rectangles that can represent his path: (Write the length and width on the drawing).



4 Saleh owns a rectangular farm. The length of the fence surrounding the farm is 50 m.

Draw two different rectangles that can represent the shape of the farm: (Write the length and width on the drawing).



5 A square has a side length of 12 cm. Find its perimeter.
Then draw a rectangle with the same perimeter.

6 A square has a side length of 28 cm. Find its perimeter.
Then draw a rectangle with the same perimeter.

7 Sarah is drawing a line around a square cake. One side of the cake is 30 centimeters long.
How long is the line drawn by Sarah?

8 Complete the following:

(a) Perimeter of the **rectangle**: P = ... + ... + ... + ...

(b) Perimeter of the **rectangle**: P = (.................. + ...) X 2.

(c) Perimeter of the **rectangle**: P = (.................. X 2) + (.................. X 2).

(d) Perimeter of the **square**: P = ... X ....

(e) A rectangle has a length of 5 cm and a width of 3 cm, its perimeter is ....

(f) A rectangle of 15 m length and 10 m width, its perimeter is ....

(g) A square with side length 6 cm, its perimeter is ....

(h) A square with side length 20 mm, its perimeter is ....

9 Choose the correct answer:

(a) Perimeter of the rectangle: ....

(P = L + (W X 2) or P = (L + W) X (L + W) or P = (L + W) X 2)

(b) Perimeter of the rectangle: ....

(P = (L X 2) + (W X 2) or P = (L + 2) X (W + 2) or P = (L X W) X 2)

(c) Perimeter of the rectangle: ....

(P = L X W X L X W or P = L + W + L + W or P = L X W X 2)

(d) A rectangle has a length of 7 cm and a width of 5 cm. Its perimeter is .... cm. (13 or 35 or 24)

(e) A rectangle has a length of 6 cm and a width of 8 cm, so its perimeter is .... cm. (28 or 14 or 48)

(f) A square whose side length is 6 cm, its perimeter is .... cm. (24 or 36 or 18)

(g) A square whose side length is 10 cm, its perimeter is .... cm. (40 or 100 or 20)

Worksheet 1

1 Choose the correct answer:

ⓐ 2,500 centimeters = ... meters. (25 or 250 or 25,000)

ⓑ Million is the **smallest** number formed from .... digits. (6 or 7 or 10)

ⓒ A rectangle has a length of **8** cm and a width of **6** cm. Its perimeter is .... (48 or 14 or 28)

ⓓ Three hundred million and thirty thousand: **(in Standard Form)**: .... (300,030,000 or 300,300,000 or 300,003,000)

ⓔ 198 + 214 = ... + 212. (190 or 200 or 214)

2 Complete the following:

ⓐ A square whose sides are **20** mm, then its perimeter is:
P= ....

ⓑ (4 X 10,000,000) + (2 X 10,000) + (3 X 10) = ...

ⓒ The place value of the digit 6 in the number 245,602,714 is ....

ⓓ 45 + (55 + 19) = (.................... + 55) + ... (.................... *Property)*

ⓔ 4,500 deciliters = ... liters.

3 Find the product of each of the following:

ⓐ 456,258 + 245,051 = ...

ⓑ 500,120 − 150,058 = ...

ⓒ 500,000,000 + 2,000,000 + 400 + 70 + 3 = ...

ⓓ 800,000,000 − 1 = ...

4 Arrange the following numbers in a descending order:

450,000 , 500,400 , 400,500 , 540,000 , 405,000

The order: .... , ... , ... , ... , ...

5 A painting is 5 meters in length and 2 meters in width. Find the perimeter of the necessary frame for this painting.

....

Exercises on Lesson 2

Fill the Space (The Area)

1 **Calculate the area of the following rectangles (Show your steps):**

(a) Area = ...

....

....

6 cm

4 cm

(b) Area = ...

....

....

10 cm

4 cm

(c) Area = ...

....

....

9 mm

6 mm

(d) Area = ...

....

....

12 m

10 m

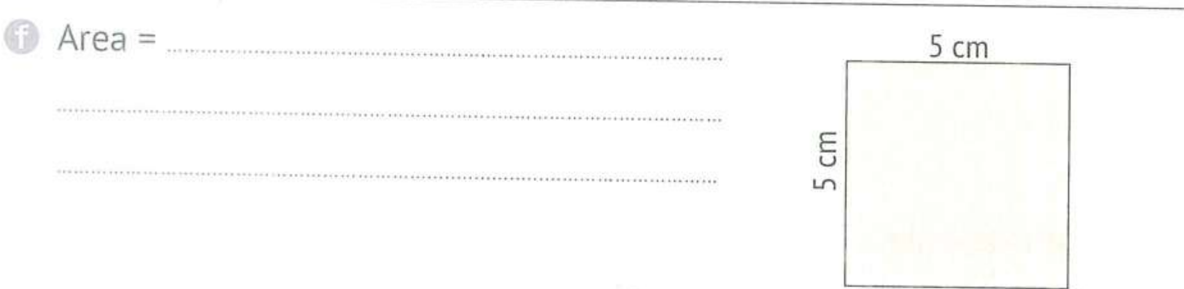
ⓔ Area = ...

....

....

20 m

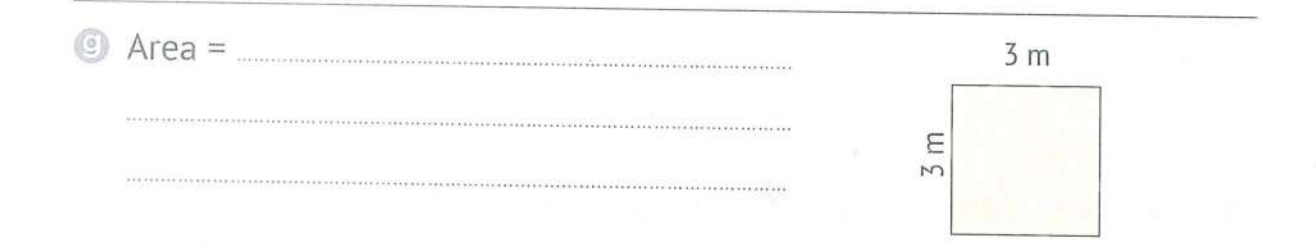
20 m



ⓕ Area = ...

....

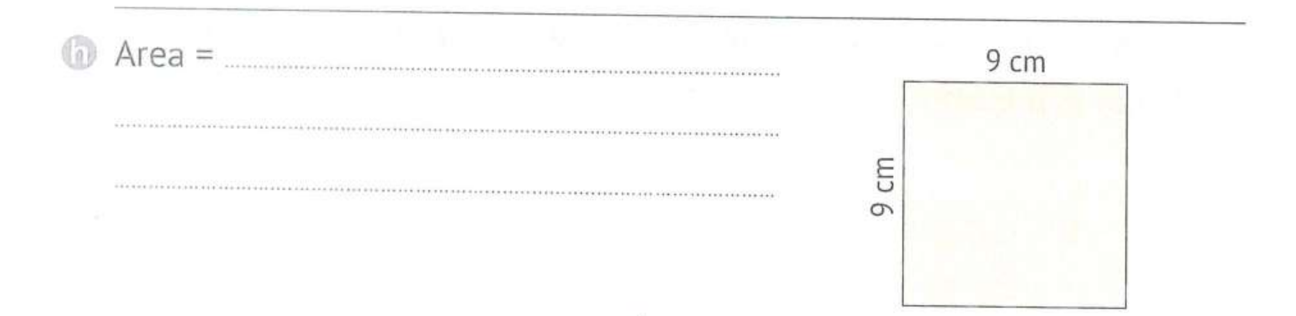
....



ⓖ Area = ...

....

....



ⓗ Area = ...

....

....

2 **A small ant farm in the form of a rectangle. Its dimensions are 20 centimeters and 8 centimeters. What is the area of this farm?**

Area = ...

....

3 **Jannat is designing a work of art and she needs two pieces of paper. Each piece must be 6 meters long and 2 meters wide. The two pieces of paper will be glued together at the two short edges. When she's finished with the artwork, she must decide whether to frame it or hang it up and cover it with glass. Jannat needs to know the measurements of the frame and glass to make her decision.**

What is the frame size?

Do you have to calculate the area or the perimeter to find this measurement?

....

....

What is the glass size?

Do you have to calculate the area or the perimeter to find this measurement?

....

....

4 **You have 36 squares of rugs to be arranged on the floor in a rectangular form. Draw two possible arrangements with measurements of length and width. What is the perimeter of each arrangement? What is the area?**

....

....

5 Draw two rectangles, each with an area of 18 cm², then find the perimeter of each of them:

Perimeter = ...

....

Perimeter = ...

....

6 In a science project, two students are creating an ant farm enclosure, which is 5 meters long and two meters high. Draw the enclosure with the dimensions. Then find the perimeter and area.

Perimeter = ...

....

Area = ...

....

7 A rectangular bakery has an area of 30 square meters.
What is the perimeter of this bakery?
Draw your answer while writing the dimensions.

Perimeter = ...

....

8 **Draw a square of an area of 25 cm^2. Then find its perimeter. (Write the dimensions on the drawing).**

....

9 **Complete the following:**

(a) Area of the **rectangle**: A = ...

(b) Area of the **square**: A = ...

(c) A rectangle has a length of 9 cm and a width of 3 cm. Its perimeter is .... cm, and its area is .... cm^2.

(d) A rectangular piece of land with a length of 20 meters and a width of 10 meters, then its area is .... m^2.

(e) In the opposite figure, there are two conjoined rectangles.
The sum of their areas:

....

....

....

3 cm 7 cm 3 cm

10 **Choose the correct answer from the brackets:**

(a) Area of the **rectangle**: ....

(A = L + W or A = L – W or A = L X W)

(b) Area of the **square**: ....

(A = L X 2 or A = L – L or A = L + L)

(c) A square with sides of 7 mm, its surface area = ... mm^2.

(14 or 49 or 28)

(d) A rectangle has a length of 8 cm and a width of 4 cm. Its surface area is .... cm^2.

(32 or 12 or 24)

(e) The total area of the opposite figure is 40 cm^2. The area of rectangle (2) = ...

(24 or 16 or 40)

4 cm 4 cm (1) (2)

Worksheet 2

1 Choose the correct answer:

a) A square with side length 8 cm, its area is .... cm^2.
(32 or 64 or 16)

b) The value of the digit 7 in the **Ten-thousands** place = ...
(70 or 7,000 or 70,000)

c) 400 Millions + 40 Thousands + 4 = ...
(400,400,400 or 400,040,004 or 4,000,404)

d) A rectangle has a length of 6 cm and a width of 3 cm. Its perimeter is ....
(18 cm or 18 cm^2 or 9 cm^2)

e) 45 + 34 = ... (45 + 3 + 4 or 4 + 5 + 3 + 4 or 45 + 30 + 4)

2 Complete the following:

a) A rectangle is 10 cm long and 5 cm wide. A = ...

b) 45,218 ≈ .... **(Rounded to the nearest 10,000)**

c) The number 45,100,000 comes right **after** the number ....

d) A square has an area of 25 cm^2, the length of its side is ....

e) 100,000 meters = ... kilometers.

3 Complete using (<, = or >):

a) 45,025,000 40,525,000.

b) 4 X 100,000,000 4 X 1,000,000,000.

c) 4,000 grams 40,000 decigrams.

d) 200 millions 2,000,000.

4 Calculate the perimeter and area of the corresponding figure:

a) Area = ...

b) Perimeter = ...

4 cm 8 cm
4 cm
(1) (2)

5 In a glass company, a piece of glass is cut to cover the top of a dining table. The table measures 8 meters by 6 meters. What is the area of the piece of glass needed for this table?

....

Exercises on Lesson 3

Something Is Missing!

1 Complete the following table:

	Length	Width	Perimeter	Area
a	8 cm	5 cm	....	....
b	....	4 m	20 m	....
c	....	7 m	26 m	....
d	15 mm	....	50 mm	....
e	20 mm	....	60 mm	
f	....	6 cm	....	42 cm².
g	....	7 cm	....	63 cm².
h	6 dm	....	....	24 dm².
i	8 dm	....	....	40 dm².

2 Complete the following table:

	Side Length	Perimeter	Area
a	4 cm	....	....
b	7 cm	....	....
c	....	32 m	....
d	....	20 m	....
e	....	....	36 mm^2
f	....	....	81 mm^2

3 Some fire ants leave the hill to search for food. They went 8 meters east from the hill and then turned around and walked 4 meters north. A big tree got in their way, so they walked around it. When they passed the tree, they went west for another 3 meters and then south for 8 meters to return to the hill. Look at their path in the diagram.

Determine the unknown measurements.

What is the total number of meters they walked?

What is the area of the shape?

....

....

....

....

4 cm

4 cm

..........m

..........m

4 cm

8 cm

4 Tahani wants to put a square frame around her father's picture. The area of the picture that she wants to frame is 144 square centimeters. What is the width and length of the frame? Draw the frame and show your steps.

....

....

....

....

....

5 Soliman works on a farm. The fence around the goats fell off, so his uncle asked him for more wires to build a new fence. He told him that the fence is 25 meters wide and that he needed to get 110 meters of wire to encircle the entire space. What is the length of the unknown side? Draw the fence and find the unknown length.

....

....

....

....

6 A rectangular mirror with an area of 900 square centimeters. The mirror is 45 cm long. what's its width?

....

....

7 Sameh's book is 30 cm long. The cover of Sameh's book has a perimeter of 100 cm. What is Sameh's book width?

....

....

8 Choose the correct answer from the brackets:

a) A rectangle has a perimeter of 60 cm and a length of 20 cm, then its width is .... cm. (3 or 10 or 40)

b) A rectangle has an area of 30 cm^2 and a width of 5 cm. Its length is .... cm. (6 or 9 or 25)

c) A square has a perimeter of 20 cm, the length of its side is .... cm. (5 or 4 or 10)

d) A square has an area of 36 cm^2, the length of its side is .... cm. (9 or 4 or 6)

e) A square has a perimeter of 12 cm, then its area is .... cm^2. (9 or 36 or 144)

f) A square has an area of 25 cm^2, its perimeter is .... cm. (5 or 20 or 100)

9 Complete the following:

a) A rectangle has a perimeter of 40 cm and a length of 12 cm, then its width is .... cm.

b) A rectangle has an area of 45 cm^2 and a width of 5 cm, so its length is .... cm.

c) A rectangle has a perimeter of 28 cm and a length of 8 cm, then its area is .... cm^2.

d) A rectangle has an area of 32 cm^2 and a width of 4 cm. Its perimeter is .... cm.

e) A square has a perimeter of 16 cm, the length of its side is .... cm.

f) A square has an area of 49 cm^2, the length of its side is .... cm.

g) A square has a perimeter of 40 cm, then its area is .... cm^2.

h) A square has an area of 36 cm^2, its perimeter is .... cm.

Worksheet 3

1 Choose the correct answer:

a) A square has a perimeter of 12 cm, then its area is .... cm^2.
(3 or 9 or 24)

b) The **largest** 8-different-digit-number is ....
(10,000,000 or 99,999,999 or 98,765,432)

c) 5 + 0 = 5 (.................... *Property)*
(Associative or Commutative or Additive Neutral Element)

d) 25,452 ≈ 30,000. *(Rounded to the nearest ....)*
(1,000 or 10,000 or 100,000)

e) The best unit for measuring the **height** of a school is ....
(kilometers or meters or centimeters)

2 Complete each of the following:

a) A rectangle has an area of 45 cm^2 and a width of 5 cm, then its perimeter is ....

b) 5,065 cm = ... m, ... cm.

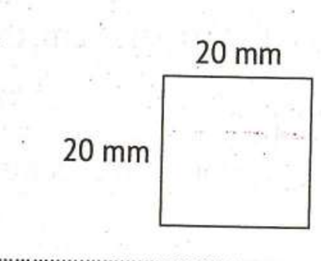
c) 300,450 = (3 X ....) + (4 X ....) + (5 X ....).

d) 245 + 218 = ... + 245.

e) If: χ + 245 = 786, then χ = ...

3 Calculate the perimeter and area of each of the following shapes:

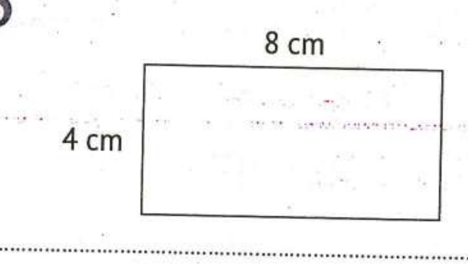
a)



....

....

b)



....

....

4 A city in the shape of a rectangle. It is 4 kilometers wide and 8 kilometers long. What is the area of this city?

....

Exercises on Lesson 4

Odd Shapes

1 Divide each of the following shapes into rectangles or smaller squares and then calculate the perimeter and area of the corresponding figure:

a ....

....

....

....

....

....

12 cm
3 cm
7 cm
9 cm
4 cm
3 cm

b ....

....

....

....

....

....

8 cm
.... cm
.... cm
15 cm
5 cm
14 cm

c ....

....

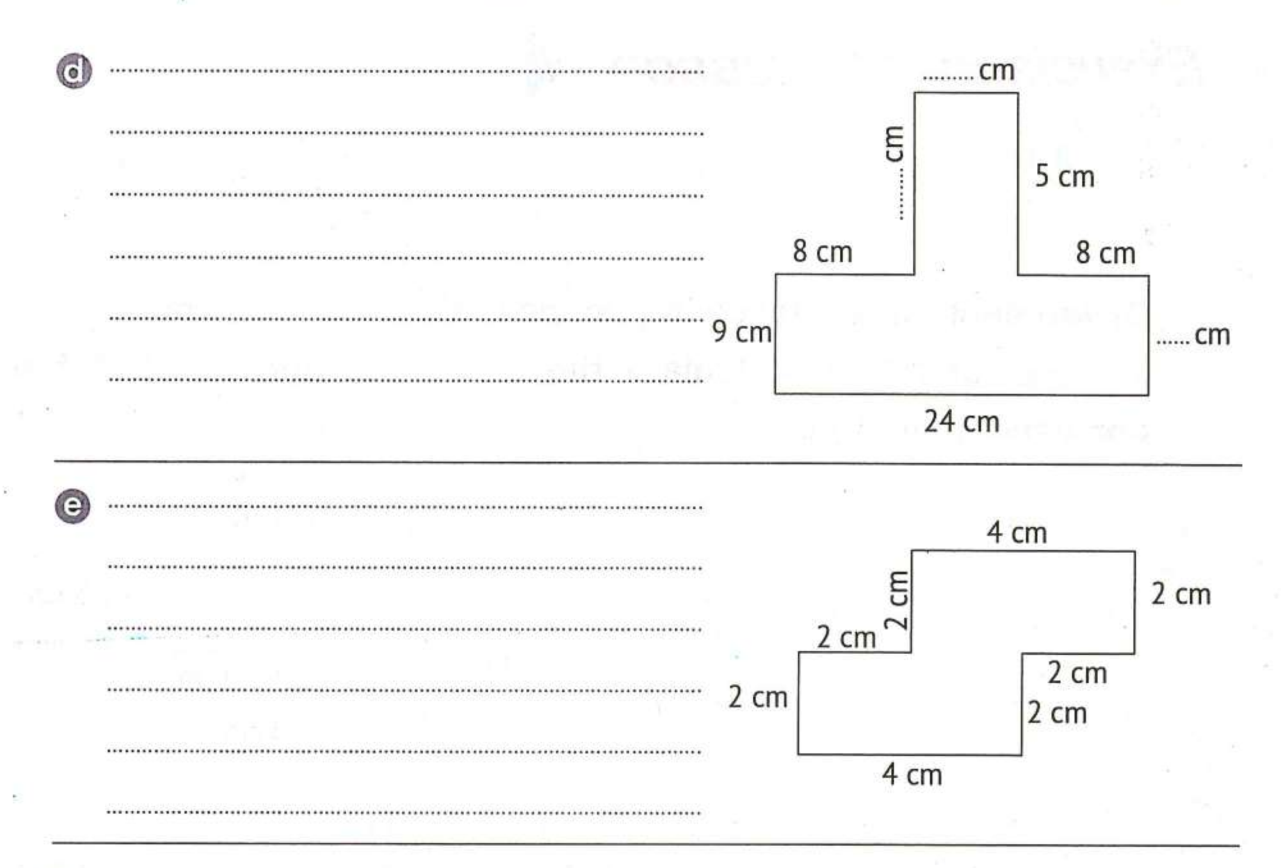
....

....

....

....

20 cm
8 cm
12 cm
16 cm
.... cm
.... cm



2 **Combine the following two geometric shapes to form one combined shape. Calculate the area and perimeter of this shape: (Draw your geometric figure and write the measurements on the sides).**

8 cm
3 cm

6 cm
6 cm

....

....

....

....

....

....

3 Combine the following two geometric shapes to form one combined shape. Calculate the area and perimeter of this shape: (Draw your geometric figure and write the measurements on the sides).

6 cm
2 cm

5 cm
4 cm

....

....

....

....

....

....

4 A company pushes three tables together for a team meeting. What is the area of the shape made by the tables? Explain the steps of the solution.

....

....

....

....

....

....

....

....

....

1 m
2 m
Table 1
2 m
1 m
2 m
Table 2
1 m
2 m
Table 3
2 m
1 m

Exercises on Lesson 5

Growing Dimensions

1 A rectangle is 5 centimeters wide. Its length is 4 times its width. Draw the rectangle, write the dimensions and find its area and perimeter.

Area = ...

....

Perimeter = ...

....

2 A rectangle is 12 centimeters long. Its width is one-third of its length. Draw the rectangle, write the dimensions and find its area and perimeter.

Area = ...

....

Perimeter = ...

....

3 Adam's rectangular garden has an area of 20 square meters. The longest side of the garden is 5 meters. Draw Adam's garden. The length and width of Dahlia's garden is three times the length and width of Adam's rectangular garden. What is the perimeter of Dahlia's garden?

....

....

....

....

4 The area of the sand playground next to Mohamed's house is 15 square meters. The longest side is 5 meters long. Draw this sand playground.
The length and width of the sand playground where Mohamed is playing in the garden is twice the length and width of the playground next to the house. Find the perimeter and area for each of the two sand fields.

....

....

....

....

5 Ramy and Salah went on a camping trip. The diagram shows their campground. If the length of the camp ground is six times the length of the tent and the width of the campground is three times the width of the tent.
How much space will they leave to set up the rest of their camping gear?

....

....

....

....

....

....

....

.........m

The campground

3 m

The tent

2 m

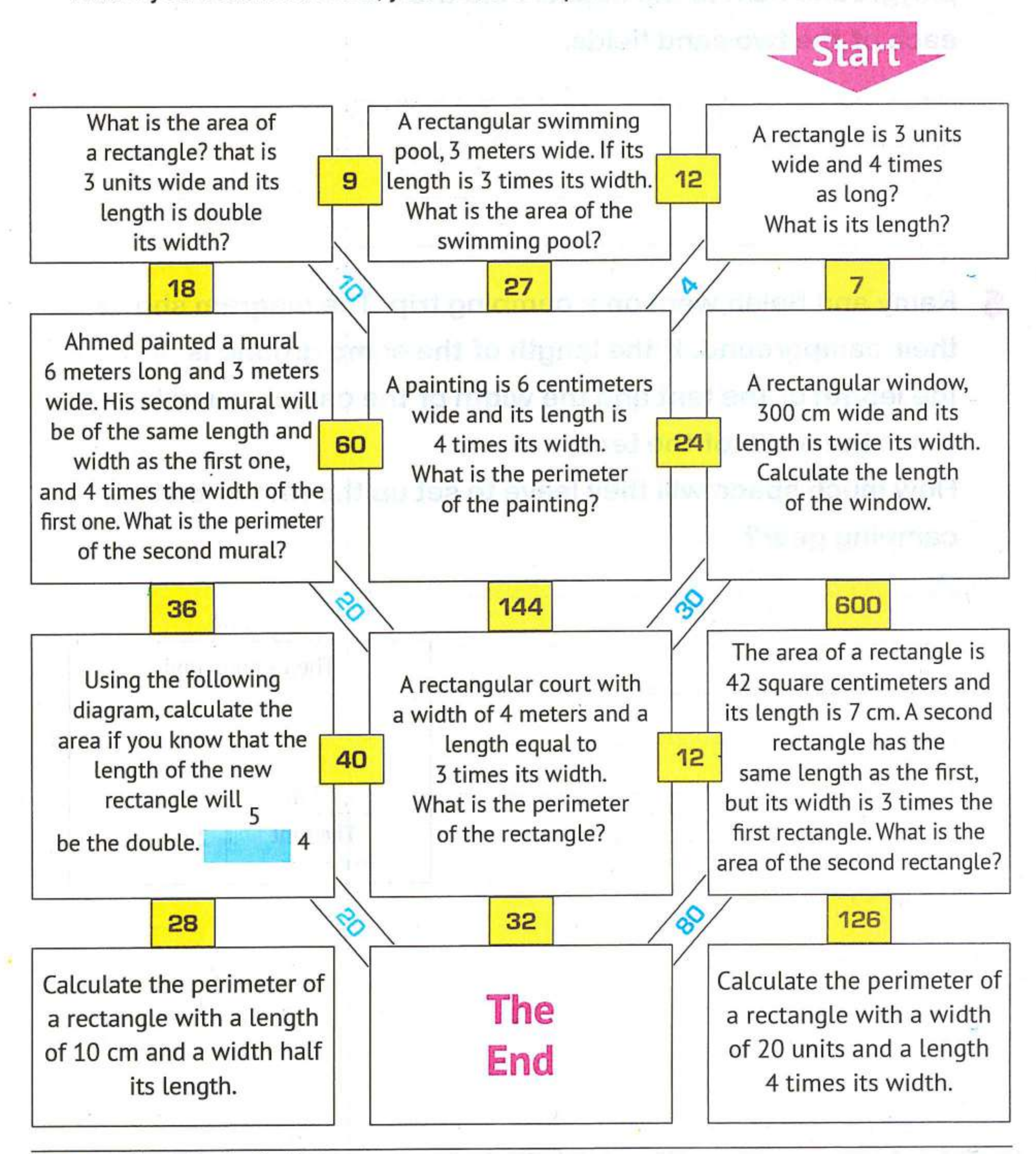
.........m

The Maze

Your goal is to complete the game from the "Start" to the "End".

Start the game from the **"Start"** sign.

To move to the next space in the game, the number in the path must be a solution to the space you are in. Use the arrows to show the path you took. When you reach the end, you have completed the maze. Good Luck!



Worksheet 4

1 Choose the correct answer:

a) The **largest** 6-digit-number that can be formed from the digits (9, 1, 7) is .... (971,971 or 999,971 or 111,179)

b) 75 - 49 = 74 – .... (50 or 48 or 98)

c) 50 m + 5 dm = ... cm. (505 or 5,050 or 550)

d) **Decagram** is a unit of measuring .... (length or mass or capacity)

e) The digit .... in the number 745,215,369 is in the **Hundred-thousands** place. (3 or 2 or 7)

2 Complete the following:

a) A rectangle has an area of 30 cm^2 and a length of 10 cm. Then its perimeter is ....

b) The number 36,000,250: **(in Word Form)**

....

c) 120 hours = ... days.

d) The number 7,145 ≈ 7,100. *(Rounded to the nearest ....)*

e) A square whose sides are 100 mm, its area is .... cm^2.

3 Calculate the area and perimeter of following shape:

....

....

....

....

....

....

16 cm
9 cm
...... cm
11 cm
...... cm
6 cm

4 The area of a rectangle is 42 square centimeters and its side length is 7 centimeters. The second rectangle has the same length as the first, but its width is 3 times that of the first rectangle. What is the area of the second rectangle?

....

Theme 2 Mathematical Operations and Algebraic Thinking

Unit 5 Multiplication as a Relationship

Concept 5.1 Develop Multiplicative Comparisons

Exercises on Lesson 1

Understanding Multiplicative Comparison

1 **Complete as in the example:**

Ex. **If 5 X 3 = 15, then 15 is triple 5.** **or** **15 is 5 times 3.**

a) If 7 X 6 = 42,
then 42 .... 6. **or** 42 .... 7.

b) If 3 X 8 = 24,
then 24 .... 8. **or** 24 .... 3.

c) If .... X .... = ...
then 36 is 4 times 9. **or** 36 .... 4.

d) If .... X .... = ... ,
then 21 is triple 7. **or** 21 .... 3.

e) If 2 X 8 = 16,
then .... is double .... **or** .... , is 8 times ....

f) If 7 X 8 = 56,
then .... is 8 times .... **or** .... , is 7 times ....

2 **Compare between the following numbers:**

a) 18 and 9 ⇨ 18 .... 9.

b) 25 and 5 ⇨ 25 .... 5.

c) 27 and 3 ⇨ ....

d) 28 and 4 ⇨ ....

e) 40 and 8: ....

f) 63 and 9: ....

g) 72 and 8: ....

3 Complete:

a) 9 + 9 + 9 + 9 + 9 + 9 = ... X .... = ...

b) 2 + 2 + 2 + 2 + 2 = ... X .... = ...

c) 8 + 8 + 8 + 8 = ... X .... = ...

d) 3 + 3 + 3 = ... X .... = ...

e) 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 = ... X .... = ...

f) 5 + 5 + 5 + 5 + 5 = ... X .... = ...

g) 5 X 7 = ... + ... + ... + ... + ...

h) 6 X 6 = ... + ... + ... + ... + ... + ...

i) 4 X 8 = ... + ... + ... + ...

j) 3 X 9 = ... + ... + ...

k) 2 X 5 = ... + ... + ... + ... + ...

l) 3 X 1 = ... + ... + ...

4 Complete each of the following using the Strip Diagrams:

a) .... is .... **times** ....

9	9	9	9	9

b) .... is .... **times** ....

4	4

c) .... is .... **times** ....

6	6	6	6	6	6

d) .... is .... **times** ....

8	8	8

e) .... is .... **times** ....

3	3	3	3	3	3	3

f) .... is .... **times** ....

5	5	5	5

g) .... is .... **times** ....

7	7	7	7	7	7	7	7

h) .... is .... **times** ....

2	2	2	2	2	2	2	2	2

5 Divide the Strip Diagrams according to the numerical sentence:

ⓐ 28 is **seven** times 4.

ⓑ 15 is **triple** 5.

ⓒ 18 is **six** times 3.

ⓓ 36 is **four** times 9.

ⓔ 48 is **eight** times 6.

ⓕ 56 is **eight** times 7.

ⓖ 20 is **four** times 5.

ⓗ 12 is **six** times 2.

6 Choose the correct answer:

ⓐ To compare between **12** and **3**: ....

(12 is three times 4 or 12 is four times 3 or 12 is three times 3)

ⓑ If 5 X 6 = 30, then ....

(30 is six times 5 or 30 is five times 5 or 30 is six times 6)

ⓒ **"24 is triple 8"** is a numerical sentence to compare between:

.... and .... (3 and 8 or 24 and 3 or 24 and 8)

ⓓ 4 + 4 + 4 + 4 + 4 = ... (4 X 4 or 4 + 5 or 4 X 5)

ⓔ 6 + 6 + 6 + 6 = ... (3 X 8 or 6 + 4 or 6 X 6)

ⓕ 5 X 6 = ... (6 + 6 + 6 +6 or 10 +10 +10 or 5 + 6)

ⓖ 3 X 9 = ... (9 + 9 + 9 or 20 X 7 or 3 + 9)

ⓗ The following **Strip Diagram** represents ....

8	8	8	8

(32 is four times 8 or 32 is eight times 4 or 32 is eight times 8)

(i) The following **Strip Diagram** represents ....

5	5	5	5	5	5

(30 is six times 5 or 30 is five times 6 or 32 is five times 5)

(j) Which of the following **Strip Diagrams** represents **"12 is four times 3"**.

3	3	3	3

or

3	3	3

or

4	4	4

7 Complete the following:

(a) To compare between **6** and **2**: (6 .... 2).

(b) To compare between **8** and **4**: (8 .... 4).

(c) **"30 is triple 10"** is a sentence to compare between: .... and ....

(d) **"36 is four times 9"** is a sentence to compare between: .... and ....

(e) If 8 X 6 = 48, then " .... is **six times** .... ".

(f) If 7 X 3 = 21, then "21 .... 7".

(g) 9 + 9 + 9 + 9 + 9 + 9 = ... X ....

(h) 6 + 6 + 6 + 6 + 6 +6 = 4 X ....

(i) 5 X 8 = ... + ... + ... + ... + ...

(j) 4 X 3 = ... + ... + ...

(k) The following **Strip Diagram** represents: ".................... is **six times** ....".

4	4	4	4	4	4

(l) The following **Strip Diagram** represents: ".................... is **triple** ....".

2	2	2

Worksheet 1

1 Choose the correct answer:

a) The **greatest** 8-different-digit-number is ....
(99,999,999 or 98,765,432 or 10,000,000)

b) If 6 x 3 = 18, then 18 is .... 6. (triple or six times or double)

c) 85 + 99 = 84 + ... (98 or 100 or 85)

d) The length of a rectangle is **double** its width. If the length is 4 cm, then the area of the rectangle = ... cm^2. (32 or 8 or 12)

e) 6 X 3 = ... (9 + 9 or 6 + 3 or 6 + 6)

2 Complete the following:

a) The value of the digit 7 in the number 45,**7**89,024 is ....

b) If 28 is **seven times** 4, then: .... X .... = 28.

c) 14 + (16 + 35) = (.................... + 16) + ... (.................... *Property*)

d) 7 + 7 + 7 + 7 + 7 +7 = ... X ....

e) 8 X 30 = ... X 10.

3 Complete using (< , = or >):

a) 78,064,002 ⬜ 78,604,002.

b) (7 X 10,000,000) + (6 X 10,000) + (5 X 100) ⬜ 70,060,500.

c) 9 + 9 + 9 + 9 ⬜ 6 + 6 + 6 + 6 + 6 + 6.

d) 8 X 7 ⬜ 9 X 6.

e) 175 – 99 ⬜ 174 – 100.

4 Complete each of the following using the Strip Diagrams:

a) .... is .... **times** ....

2	2	2	2	2

b) .... is .... **times** ....

8	8

c) .... is .... **times** ....

3	3	3	3	3	3	3	3

Exercises on Lessons 2&3

Creating Multiplicative Comparison Equations & Solving Multiplicative Comparison Equations

1 **Write equations for the following comparisons.**

(Use a symbol to represent the unknown number):

ⓐ A number is 5 times 3: (.................................)

ⓑ A number is 7 times 6: (.................................)

ⓒ A number is 3 times 8: (.................................)

ⓓ A number is 4 times 9: (.................................)

ⓔ A number is double 6: (.................................)

ⓕ 36 equals 5 times a number: (.................................)

ⓖ 28 equals 7 times a number: (.................................)

ⓗ 35 equals 5 times a number: (.................................)

ⓘ 48 equals 6 times a number: (.................................)

ⓙ 49 equals .... times 7: (.................................)

ⓚ 64 equals .... times 8: (.................................)

ⓛ 42 equals .... times 6: (.................................)

ⓜ 36 equals .... times 4: (.................................)

2 **Write the multiplication equation that represents each of the following sentences. (Use a symbol to represent the unknown number):**

ⓐ Ahmed's age is three times Maha's age. If Maha is 5 years old, what is Ahmed's age?

....

....

ⓑ A square with sides of 3 cm.

Write an equation showing the **perimeter** of the square (P).

....

....

ⓒ A rectangle is of 6 cm length and 4 cm width.

Write an equation that shows the **area** of the rectangle (A).

....

....

ⓓ Hazem has **five times** the money that Karim has.

If Hazem has 45 pounds, what is the amount of money with Karim?

....

....

ⓔ If the price of one pen is 3 pounds, what is the price of 7 pens?

....

....

3 Find the value of the unknown in each of the following equations (Solve the equations):

ⓐ $x \times 5 = 35$, x = ...

ⓑ $y \times 8 = 48$, y = ...

ⓒ $m \times 9 = 45$, m = ...

ⓓ $6d = 30$, d = ...

ⓔ $7n = 14$, n = ...

ⓕ $9a = 54$, a = ...

ⓖ $e = 8 \times 6$, e = ...

ⓗ $k = 3 \times 6$, k = ...

ⓘ $q = 6 \times 4$, q = ...

ⓙ $s = 5 \times 2$, s = ...

4 Write equations for the following comparisons:
(Use symbols to represent the unknown, then find the value of it):

a) A number is equal to 6 times 3. Equation : ....
Solution : ....

b) A number is equal to 7 times 4. Equation : ....
Solution : ....

c) A number is equal to 3 times 8. Equation : ....
Solution : ....

d) A number is equal to 5 times 9. Equation : ....
Solution : ....

e) 45 equals 9 times a number. Equation : ....
Solution : ....

f) 40 equals 5 times a number. Equation : ....
Solution : ....

g) 12 equals 3 times a number. Equation : ....
Solution : ....

h) 21 equals 7 times a number. Equation : ....
Solution : ....

5 Complete the following:

a) The equation that represents "24 equals three times a number".
is ....

b) The equation that represents "56 equals nine times a number".
is ....

c) The equation that represents "a number equals five times 2".
is ....

(d) The equation that represents "a number equals **seven times 3**".
is ....

(e) If $3x = 18$, then x = ...

(f) If $6y = 42$, then y = ...

(g) If $28 = 4 \times m$, then m = ...

(h) If $a = 6 \times 9$, then a = ...

6 **Read the word problems and think about the comparisons, then write the multiplication equation that represents each problem:**

(Use a **symbol** to represent the unknown number. Then solve the equations):

(a) Rashad's team scored **9** goals in football. This is **3 times** the number of goals scored by Yassin's team.

How many goals did Yassin's team score?

Equation : ....

Solution : ....

(b) Wafaa has **18 pounds**. This is equal to **3 times** what Hana has.

How much does Hana have?

Equation : ....

Solution : ....

(c) Saleh has **15 apples** and his sister Hala has **5 apples**.

How many times does Saleh have the same number of apples as Hala?

Equation : ....

Solution : ....

(d) The height of one of a residential tower is 36 meters and the height of a tree is 6 meters. How many times is the height of the residential tower as the height of the tree?

Equation : ....

Solution : ....

(e) Hani is **twice** as old as his brother.

His brother is 8 years old. How old is Hani?

Equation : ....

Solution : ....

(f) The distance from Samir's house to the bank is **5 times** the distance from his house to the museum. If his house is 20 kilometers from the museum, how many kilometers is his house from the bank?

Equation : ....

Solution : ....

7 Choose the correct answer from the brackets:

(a) Sameh is **three times** the age of his brother. His brother is 4 years old. Which of the following equations is used to know the age of Sameh?

.... ($a = 3 + 4$ or $a = 4 - 3$ or $a = 3 \times 4$)

(b) Sarah and her sister peeled some oranges. Sarah peeled 6 oranges. Sarah's sister peeled **3 times** as many oranges as Sarah. Which of the following equations can be solved to find the number of oranges that Sarah's sister peeled? .... ($n \times 3 = 6$ or $n = 3 \times 6$ or $n = 6 \div 3$)

(c) An aquarium contains 5 red fish and **3 times** as many blue fish. How many blue fish are in the tank? .... (15 or 8 or 2)

(d) If: $3x = 9$, then $x =$ .... (3 or 27 or 12)

(e) If: $6 \times y = 24$, then $y =$ .... (18 or 30 or 4)

(f) The equation "$m = 4 \times 2$" represents a number equal to ....

(four times 2 or four times 4 or double 2)

Worksheet 2

1 Choose the correct answer:

ⓐ Three billion, twenty-five thousand, two hundred: ....
(in Standard Form) (3,025,200 or 3,000,025,200 or 3,000,000,225)

ⓑ If 6 x m = 18, then 18 is .... m.
(three times or six times or two times)

ⓒ A square with side length L and perimeter P, the equation that represents the perimeter is: .... (P = L X L or P = L + 4 or P = 4L)

ⓓ A square has an area of 36 cm^2, then its perimeter = ...
(24 or 12 or 81)

ⓔ 8 + 8 + 8 + 8 = ... (8 X 8 or 8 X 4 or 8 + 4)

2 Complete the following:

ⓐ The value of the digit 5 in the Hundred-millions place is ....

ⓑ If 24 is six times a, then 24 = ...

ⓒ 16 + 35 = ... + 16. (.................... Property)

ⓓ If 45 = 9 X u, then 45 is .... times u.

ⓔ (7 X 100,000,000) + (2 X 1,000,000) + (8 X 10,000) + (3 X 100)
= .... **(in Standard Form)**

3 Arrange the following numbers in an ascending order:

450,005 , 850,600 , 200,755 , 360, 450

The order: .... , ... , ... , ...

4 Write an equation to compare each of the following:

ⓐ 12 and 4: **Equation:** ....

ⓑ 20 and 5: **Equation:** ....

ⓒ 8 and 16: **Equation:** ....

ⓓ 54 and 9: **Equation:** ....

Concept 5.2 Properties and Patterns of Multiplication

Exercises on Lessons 4,5&6

Commutative Property of Multiplication, Patterns of Multiplying by 10s & Exploring Patterns in Multiplication

1 Find the result of each of the following:

(a) 5 X 1 = ...
(b) 1 X 6 = ...
(c) 9 X 0 = ...
(d) 0 X 9 = ...
(e) 4 X 10 = ...
(f) 6 X 100 = ...
(g) 7 X 1,000 = ...
(h) 30 X 10 = ...
(i) 12 X 20 = ...
(j) 40 X 100 = ...
(k) 15 X 100 = ...
(l) 60 X 400 = ...
(m) 50 X 600 = ...
(n) 30 X 50 = ...
(o) 300 X 700 = ...
(p) 500 X 2,000 = ...
(q) 500 X 80 = ...
(r) 12 X 10,000 = ...
(s) 150 X 100 = ...
(t) 564 X 1,000 = ...

2 Complete the following:

(a) 8 X .... = 3 X 8.
(b) 9 X 7 = ... X 9.
(c) .... X 2 = 2 X 6.
(d) 12 X 6 = 6 X ....
(e) .... X 1 = 9.
(f) 1 X .... = 4.
(g) 7 X .... = 0.
(h) .... X 5 = 0.
(i) .... X 10 = 80.
(j) 5 X .... = 500.
(k) .... X 1,000 = 9,000.
(l) .... X 10 = 400.
(m) .... X 30 = 1,200.
(n) 60 X .... = 60,000.

- (o) .... X 100 = 1,700.
- (p) 40 X .... = 1,200.
- (q) .... X 800 = 40,000.
- (r) 60 X .... = 24,000.
- (s) 200 X .... = 180,000.
- (t) 800 X .... = 400,000.
- (u) .... X 50 = 30,000.
- (v) 48 X .... = 48,000.
- (w) 120 X .... =120,000.
- (x) .... X 10,000 = 1,450,000.

3 Complete using (<, = or >):

(a) 6 X 1	5 X 1		(b) 9 X 0	8 X 0
(c) 3 X 1	0 X 7		(d) 40 X 2	4 X 20
(e) 20 X 40	80 X 10		(f) 300 X 100	30 X 100
(g) 30 X 100	50 X 60		(h) 400 X 200	800 X 10
(i) 20 X 900	60 X 30		(j) 10 X 10	50 X 20
(k) 8,000 X 10	400 X 200		(l) 30 X 10	60 X 50
(m) 400 X 400	80 X 200		(n) 3 X 600	90 X 20
(o) 40 X 600	800 X 300		(p) 20 X 500	200 X 50

4 Match:

1 80 X 50.	(a) 200 X 1,000.
2 60 X 300.	(b) 4 X 100.
3 400 X 500.	(c) 600 X 400.
4 200 X 50.	(d) 180 X 100.
5 300 X 800.	(e) 10 X 1,000.

5 Find the value of the unknown (χ) in each of the following:

- (a) If χ X 10 = 200 , then χ = ...
- (b) If 30 X χ = 6,000 , then χ = ...
- (c) If χ X 500 = 20,000 , then χ = ...
- (d) If χ X 7 = 7 X 9 , then χ = ...
- (e) If 60 X 30 = 30 X χ , then χ = ...
- (f) If 200 X χ = 100,000 , then χ = ...

6 The length of an ant is about 2 mm. If the length of the turtle is 100 times the length of the ant. Find the length of the turtle.

....

....

7 Ahmed saves 200 pounds every month. How much will he save after six months?

....

....

8 The price of one pen is 90 piasters. How much is 20 pens?

....

....

9 The bookcase in a library contains 5 shelves, each shelf has 30 books. How many books are there in the bookcase?

....

....

10 Alia has 12 marbles. Write an equation using the Commutative Property of Multiplication to describe two ways in which the marbles can be arranged.

....

....

11 Saleem has 24 erasers. Write an equation using the Commutative Property of Multiplication to describe two ways in which he can arrange the erasers.

....

....

Worksheet 3

1 Choose the correct answer:

ⓐ 50 X .... = 2,000. (4 or 40 or 400)

ⓑ If a X 6 = 24, then a = ... (4 or 6 or 24)

ⓒ The value of the digit 6 in the **Millions** place = ... times the value of the digit 6 in the **Thousands** place. (100 or 1,000 or 10,000)

ⓓ The equation that shows "48 is **six times** m" is ....

(8 + m = 48 or 8m = 48 or 48m = 6)

ⓔ 80 + 0 + 0 + 0 + 5 = ... (800,005 or 805 or 85)

2 Complete the following:

ⓐ The **largest** 7-different-digit-number is ....

ⓑ 60 X 5,000 = ...

ⓒ The number that comes right **after** the number .... is 450,000,000.

ⓓ .... X 20 = 10,000. ⓔ 8 X .... = 8.

3 Find the result of each of the following:

ⓐ 45,652 + 44,349 = ...

ⓑ 70,208 – 35,026 = ...

ⓒ 80 X 50 = ...

ⓓ 30 X 1,000 = ...

4 The height of a tree is 2 meters, and the height of one of the residential buildings is 10 times the height of the tree. How tall is the residential building?

....

....

Exercises on Lessons 7&8

Exploring More Patterns in Multiplication & Applying Patterns in Multiplication

1 Find using the Associative Property of Multiplication:

a) 6 X 2 X 10 = (............ X ....) X .... = ... X .... = ...

b) 5 X 4 X 6 = (............ X ....) X .... = ... X .... = ...

c) 8 X 5 X 5 = (............ X ....) X .... = ... X .... = ...

d) 10 X 6 X 8 = (............ X ....) X .... = ... X .... = ...

e) 8 X 6 X 5 = ... X (............ X ....) = ... X .... = ...

f) 10 X 6 X 9 = ... X (............ X ....) = ... X .... = ...

g) 5 X 2 X 10 = ... X (............ X ....) = ... X .... = ...

h) 8 X 10 X 10 = ... X (............ X ....) = ... X .... = ...

2 Complete the following:

a) (2 X ....) X 8 = ... X (7 X 8).

b) (7 X ....) X 2 = ... X (9 X 2).

c) (.................. X 4) X 8 = 2 X (4 X ....).

d) (.................. X 3) X 10 = 7 X (3 X ....).

e) (12 X 5) X .... = ... X (5 X 20).

f) (8 X 10) X .... = ... X (10 X 2).

g) (35 X ....) x 9 = ... X (22 x 9).

h) (25 X ....) x 16 = ... X (18 x 16).

3 Complete the following:

a) 6 X .... = 600.
b) .... X 5 = 2,000.
c) 8 X .... = 400.
d) .... X 100 = 10,000.
e) 40 X .... = 200.
f) 9 X .... = 36,000.
g) 5,000 = ... **Hundreds.**
h) 200 = ... **Hundreds.**
i) 6,000 = ... **Tens.**
j) .... = 20 **Thousands.**
k) .... = 400 **Hundreds.**
l) .... = 5,000 **Tens.**

4 Use Decomposing Numbers and the Associative Property of Multiplication to solve each of the following:

a) 6 X 20 = 6 X (........ x ....) = (6 X ....) X ....
= .... x .... = ...

b) 9 X 200 = ... X (2 X ....) = (........ X ....) X ....
= .... x .... = ...

c) 7 X 3,000 = ... X (........ X 1,000) = (........ X ....) X ....
= .... x .... = ...

d) 2 X .... = ... X (8 X 10) = (........ X ....) X ....
= .... x .... = ...

e) .... x .... = 3 X (5 X 10) = (........ X ....) X ....
= .... x .... = ...

f) 9 X .... = ... X (........ X 100) = (........ X 5) X ....
= 45 X 100 = ...

(g) .... X 2,000 = ... X (.............. X 1,000) = (8 X ....) X ....

= 16 X 100 = ...

(h) 3 X 70 = ...

....

(i) 9 X 80 = ...

....

(j) 6 X 300 = ...

....

(k) 8 X 700 = ...

....

(l) 9 X 3,000 = ...

....

(m) 3 X 2,000 = ...

....

5 Complete the following:

(a) 7 X 50 = 35 X ....

(b) 6 X 300 = 18 X ....

(c) .... X 60 = 24 x 10.

(d) .... X 200 = 12 X 100.

(e) 9 X .... = 45 X 10.

(f) 8 X .... = 24 X 100.

(g) 2 X 60 = ... X 10.

h) 4 X 8,000 = ... X 1,000.

i) (8 X 5) X 6 = ... X 6 = ...

j) (3 X 2) X 20 = 6 X .... = ...

k) (6 X 20) X 10 = ... X .... = ...

l) (.................... X 3) X 9 = 6 X .... = ...

m) (.................... X 10) X 4 = 80 X .... = ...

n) (5 X 6) X .... = ... X 20 = ...

6 Choose the correct answer:

a) 7 X (3 X 5) = (.................... X 3) X 5. (7 or 5 or 3)

b) (8 X 2) X 10 = ... X 10. (8 or 2 or 16)

c) 5 X 50 = ... X 10. (5 or 25 or 10)

d) 30 X 40 = 12 X .... (10 or 100 or 1,000)

e) 2 X .... = 18 X 100. (9 or 90 or 900)

f) 8 X 20 = ... X 10. (16 or 8 or 2)

g) 6 X 300 = 18 X .... (10 or 100 or 1,000)

h) .... X 200 = 10 X 100. (5 or 50 or 10)

7 Complete using (< , = or >):

a) 8 X 21 ☐ 8 X 7 X 2 b) 18 X 5 ☐ 6 X 3 X 5

c) 5 X 12 ☐ (5 X 2) X 4 d) 20 X 90 ☐ 6 X 300

e) 40 X 100 ☐ 50 X 800 f) 900 Thousands ☐ 90 Millions

g) 30 X 100 ☐ 300 Hundreds

h) 240 X 100 ☐ 600 X 400

i) 20 Thousands ☐ 500 X 40 j) 25 X 0 ☐ 4 X (2 X 0)

k) 20 X 100 ☐ 50 X 400 l) 10 X 4,000 ☐ 80 X 50

8 Match:

1 (2 X 5) X 6.

2 8 X 30.

3 24 X 100.

4 800 X 50.

5 3 X (6 X 5).

a 3 X 800.

b 10 X 6.

c 400 X 100.

d 18 x 5.

e 24 X 10.

9 Use the Associative Property of Multiplication to calculate the number of pens in the picture.

....

....

....

....

10 Use the Associative Property of Multiplication to calculate the number of books in the picture.

....

....

....

....

11 Emad bought 5 packs of water bottles. Each package contains 4 rows of bottles, each row has 3 bottles. Use the Associative Property of Multiplication to calculate the number of water bottles Emad bought.

....

....

....

12 The library has 10 bookcases, each bookcase has 5 shelves and each shelf has 8 books. Use the Associative Property of Multiplication to calculate the number of books in the library.

....

....

....

Worksheet 4

1 Choose the correct answer:

a) 8 X 300 = 24 X .... (10 or 100 or 1,000)

b) Three hundred thirty million, three thousand = ...
(in Standard Form) (300,030,003 or 330,000,030 or 330,030,000)

c) 40 X 50 = 2 X .... (10 or 100 or 1,000)

d) 50 X 2 = 10 X .... (10 or 100 or 1,000)

e) If 45 = 9a, then a = ... (45 or 9 or 5)

2 Complete the following:

a) (9 X 2) X 5 = 9 X (.................. X ....).

b) .... **Hundreds** = 400 X 50.

c) The value of the digit 9 in the **Hundred-millions** place is ....

d) (8 X 100,000,000)+ (6 X 100,000)+(3 X 1,000)+ (4 X 100) +(2 X 1)
= .... **(in Standard Form)**

e) 8 X 30 = 8 X (.......... X 10) = (8 X 3) X .... = ... X 10 = ...

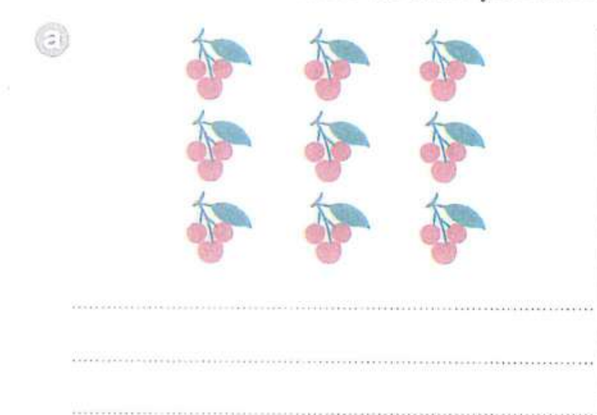
3 Arrange the following numbers in an ascending order:

450,000,002 , 405,200,000 , 450,200,000 , 405,000,002

The order: .... , ... , ... , ...

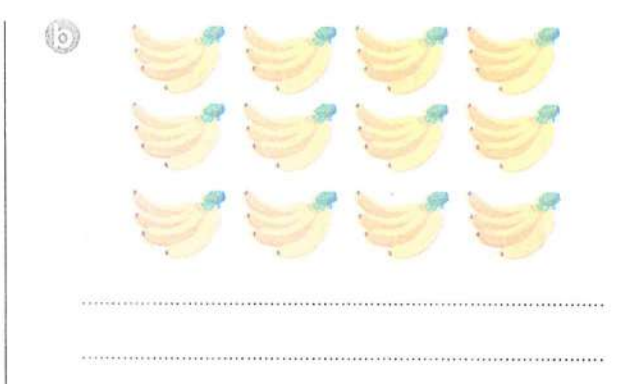
4 Use the Associative Property of Multiplication to calculate the number of fruits in the pictures:

a)



....
....
....

b)



....
....
....

Concept 6.1 Understanding Factors

Exercises on Lessons 1&2

Identifying Factors of Whole Numbers & Prime and Composite Numbers

1 **Find all the factors of each number using the Rainbow and the Factor Diagrams:**

ⓐ 10:

The factors of 10 are:

....

....

ⓑ 12:

The factors of 12 are:

....

....

ⓒ 15:

The factors of 15 are:

....

....

ⓓ 18:

The factors of 18 are:

....

....

ⓔ 20:

The factors of 20 are:

....

....

ⓕ 24:

The factors of 24 are:

....

....

ⓖ 36:

The factors of 36 are:

....

....

ⓗ 40:

The factors of 40 are:

....

....

ⓘ 17:

The factors of 17 are:

....

....

ⓙ 45:

The factors of 45 are:

....

....

2 Find all the factors of each number of the following:

(Use the method you prefer):

ⓐ 13

The factors of 13 are:

....

....

ⓑ 60

The factors of 60 are:

....

....

ⓒ 28

The factors of 28 are:

....

....

ⓓ 14

The factors of 14 are:

....

....

ⓔ 50

The factors of 50 are:

....

....

ⓕ 32

The factors of 32 are:

....

....

3 ⓐ **Count by skipping 2s, shade the numbers you say while counting. (Write the multiples of 2).**

.... , ... , ... , ... , ... , ... , ... ,

.... , ... , ... , ... , ... , ... , ... ,

.... , ... , ... , ... , ... , ... , ... ,

.... , ... , ... , ... , ... , ... , ... ,

.... , ... , ... , ... , ... , ... , ... ,

.... , ... , ... , ... , ...

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

ⓑ **Count by skipping 5s, shade the numbers you say while counting. (Write the multiples of 5).**

.... , ... , ... , ... ,

.... , ... , ... , ... ,

.... , ... , ... , ... ,

.... , ... , ... , ... ,

.... , ... , ... , ...

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

(c) Count by skipping 10s, shade the numbers you say while counting. (Write multiples of 10).

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

.... , ... , ... , ... ,

.... , ... , ... , ... ,

.... , ...

(d) Write the common multiples of 2, 5 and 10:

.... , ... , ... , ... , ... , ... , ... , ... , ... , ... , ...

4 Write down all the factors of the following numbers. Then write if the number is a prime number or not:

Number	Factors of the Number	Prime Number or Not
(a) 6	....	....
(b) 19	....	....
(c) 22	....	....
(d) 31	....	....
(e) 14	....	....
(f) 30	....	....
(g) 25	....	....
(h) 23	....	....
(i) 11	....	....

5 Complete with a tick (✓) under the factors of the number:

Number	The Factors of the Number				
	2	3	6	9	5
8					
9					
25					
12					
15					
10					
18					
27					
28					
32					
30					
36					
45					
60					
90					

6 Use the opposite table to complete:

Circle the numbers: (2 , 3 , 5 , 7).

Then cross out all the multiples of these numbers.

Circle all the remaining numbers, except one.

The encircled numbers are prime numbers.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Complete by writing the prime numbers between:

a 0	....	10
b 10	....	20
c 20	....	30
d 30	....	40
e 40	....	50
f 50	....	60
g 60	....	70
h 70	....	80
i 80	....	90
j 90	....	100

7 Complete each of the following:

a. A prime number between 30 and 40 whose Ones digit is greater than its Tens digit is ....

b. An **even** number between 20 and 30, some of its factors includes the numbers 1, 2 , 4 , 8 is ....

c. An **odd** number between 20 and 30, some of its factors are: 1, 3, 7 is ....

d. A prime number that lies between 30 and 40, and the digit in the Tens place is greater than the digit in Ones place is ....

e. A prime number that lies between 50 and 60, and the digit in the Tens place is less than the digit in the Ones place is ....

f. All prime numbers are .... numbers, except the number .... is an even number.

g. The smallest prime number is ....

h. The smallest odd prime number is ....

i. An even prime number is ....

j) The prime numbers between 40 and 50 are ....

k) The number that has only two factors is called the ....

l) The **number of factors** of the prime number is ....

m) The integer one is not a prime number because it has ....
.... only.

n) The number 6 is not a prime number because it has ....
....

9 Choose the correct answer:

a) .... is a **prime** number. (15 or 17 or 21)

b) The **smallest odd** number is .... (1 or 2 or 3)

c) The **smallest** prime number is .... (1 or 2 or 3)

d) The **smallest odd** prime number is .... (1 or 2 or 3)

e) The **smallest even** prime number is .... (1 or 2 or 3)

f) The prime number has .... only.
(one factor or two factors or three factors)

g) The number that has only **two factors** is called a .... number.
(prime or even or odd)

h) The integer one is not a prime number because it has ....
(two factors only or one factor only or more than two factors)

i) The number 10 is not a prime number because it has ....
(two factors only or one factor only or more than two factors)

j) The number 5 is a prime number because it has ....
(two factors only or one factor only or more than two factors)

k) The number of factors of 14 is .... factors. (2 or 4 or 6)

l) The number of factors of 16 is .... factors. (4 or 5 or 6)

m) A number whose factors are (1 ,2 ,4 ,5 ,10 ,20) is ....(20 or 10 or 200)

n) The number 9 is a .... number. (prime or even or odd)

Worksheet 1

1 Find the result:

ⓐ 4,589 + 1,628 = ...

ⓑ 9,028 − 4,409 = ...

ⓒ 500 X 80 = ...

ⓓ 8 X 400 = ... X 100 = ...

2 Choose the correct answer:

ⓐ All prime numbers are **odd** numbers, except .... is an **even** number. (2 or 3 or 0)

ⓑ 45 million, 40 thousand, and 5 = ... in **Standard Form**. (45,400,500 or 45,040,005 or 45,040,500)

ⓒ 4 X (6 X 3) = (4 X 6) X 3. (.................. *Property*) (Commutative or Associative or Distributive)

ⓓ A rectangle has a length of **5** cm and a width of **3** cm. Its area is .... cm^2. (15 or 16 or 8)

ⓔ The number **"0"** is not a prime number because it has .... (only one factor or only two factors or more than two factors)

3 Complete the following:

ⓐ The **smallest odd** prime number is ....

ⓑ (8 X 100,000,000) + (3 X 100,000) + (2 X 1,000) + (5 X 1)
(in Standard Form) = ...

ⓒ 90 X 300 = 27 X ....

ⓓ The prime numbers between **60 and 70** are ....

ⓔ The number of factors of **25** is ....

4 Find all the factors of each number of the following:

ⓐ Number 40

The factors of 40 are:

....

ⓑ Number 28

The factors of 28 are:

....

Exercises on Lesson 3

Greatest Common Factor (G.C.F.)

1 **Find the greatest common factor of each of the following numbers:**

ⓐ 10 , 15

Factors of the number 10: ....

Factors of the number 15: ....

The common factors are: ....

The greatest common factor (G. C. F.) is: ....

ⓑ 12 , 18

Factors of the number 12: ....

Factors of the number 18: ....

The common factors are: ....

The greatest common factor (G. C. F.) is: ....

ⓒ 6 , 8

Factors of the number 6: ....

Factors of the number 8: ....

The common factors are: ....

The greatest common factor (G. C. F.) is: ....

(d) 16 , 20

Factors of the number 16: ....

Factors of the number 20: ....

The common factors are: ....

The greatest common factor (G. C. F.) is: ....

(e) 21 , 14

Factors of the number 21: ....

Factors of the number 14: ....

The common factors are: ....

The greatest common factor (G. C. F.) is: ....

(f) 24 , 36

Factors of the number 24: ....

Factors of the number 36: ....

The common factors are: ....

The greatest common factor (G. C. F.) is: ....

(g) 48 , 32

Factors of the number **48**:

....

Factors of the number **32**:

....

The **common factors** are: ....

The **greatest common factor** (G. C. F.) is: ....

(h) 60 , 36

Factors of the number **60**:

....

Factors of the number **36**:

....

The **common factors** are: ....

The **greatest common factor** (G. C. F.) is: ....

2 **There are 28 girls and 21 boys in a class. The pupils will be divided into equal groups of girls and equal groups of boys. What is the largest number of groups that can be formed so that each group has the same number of pupils? How many boys are in each group of boys?**

How many girls are in each group of girls?

....

....

....

3 A teacher is preparing snacks to be distributed among the students. If she has 24 pieces of croissants and 16 pieces of sweets. What is the largest number of snacks the teacher can make if each meal contains exactly the same number of croissants and exactly the same number of sweets? How many croissants are there in each package? How many sweets are there in each package?

....

....

....

....

4 Mohab works in flower arrangements, he has 21 red flowers and 14 blue flowers. If Mohab wanted all the arrangements to be identical and there were no flowers left, what is the greatest number of flower arrangements could he have? How many red flowers and blue flowers are there in each arrangement?

....

....

....

....

Worksheet 2

1 Complete the following:

ⓐ The number that comes right **after** the number 25,999,999 is ....

ⓑ The **greatest common factor** of 9 and 6 is ....

ⓒ 90 x 500 = ...

ⓓ (6 x 5) x 80 = ... x .... = ...

ⓔ 600,000,000 + 400,000 + 20,000 + 300 + 20 = ...

2 Choose the correct answer:

ⓐ (3 **Ten-thousands,** 4 **Hundreds,** 5 **Ones**) x 10 = ...

(30,405 or 300,405 or 304,050)

ⓑ The **greatest common factor** of 8 and 12 is .... (2 or 4 or 6)

ⓒ 9 x 500 = 45 x .... (10 or 100 or 1,000)

ⓓ A square has an area of 25 cm^2, its perimeter is .... cm.

(25 or 5 or 20)

ⓔ 5,000 meters = ... hectometers. (5 or 50 or 500)

3 Find the greatest common factor of 30 and 45:

Factors of the number 30:

....

Factors of the number 45:

....

The common factors are: ....

The greatest common factor (G. C. F.) is: ....

4 Maryam practices swimming and spends a third of an hour swimming every day. What is the total number of minutes she spends swimming in 5 days?

....

....

Concept 6.2 Understanding Multiples

Exercises on Lessons 4, 5&6

Identifying Multiples of Whole Numbers, Common Multiples & Relationships Between Factors and Multiples

1 **Draw a line connecting each number to the other to show Skip Counting on the Number Line. Start from 0 each time:**

a) Find the multiples of 2.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Multiples of number 2 are: ....
....

b) Find the multiples of 3.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Multiples of number 3 are: ....
....

c) Find the multiples of 4.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Multiples of number 4 are: ....
....

d) Find the multiples of 5.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Multiples of number 5 are: ....
....

2 **Color the multiples using the following hundred table and Skip Counting:**

ⓐ The multiples of 2 are:

....

....

....

....

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

ⓑ The multiples of 3 are:

....

....

....

....

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

ⓒ The multiples of 4 are:

....

....

....

....

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

(d) The multiples of 5 are:

....

....

....

....

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

(e) The multiples of 6 are:

....

....

....

....

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

(f) The multiples of 7 are:

....

....

....

....

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

ⓖ The multiples of 8 are:

....

....

....

....

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

ⓗ The multiples of 9 are:

....

....

....

....

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

3 Find the multiples of each of the numbers 2 and 3, up to 20. Then find the common multiples between them:

- The multiples of 2 are: ....
- The multiples of 3 are: ....
- The common multiples of the two numbers are: ....

....

4 **Find the multiples of each of the numbers 4 and 5, up to 40. Then find the common multiples between them:**

- The multiples of 4 are: ....
- The multiples of 5 are: ....
- The common multiples of the two numbers are: ....

....

5 **Find the multiples of each of the numbers 7 and 6, up to 90. Then find the common multiples between them:**

- The multiples of 7 are: ....
- The multiples of 6 are: ....
- The common multiples of the two numbers are: ....

....

6 **Find the multiples of each of the numbers 4 and 6, up to 50. Then find the common multiples between them:**

- The multiples of 4 are: ....
- The multiples of 6 are: ....
- The common multiples of the two numbers are: ....

....

7 **Find the multiples of each of the numbers 2 and 5, up to 40. Then find the common multiples between them:**

- The multiples of 2 are: ....
- The multiples of 5 are: ....
- The common multiples of the two numbers are: ....

....

8 **Find the multiples of each of the numbers 6 and 8, up to 60. Then find the common multiples between them:**

– The multiples of 6 are: ....

– The multiples of 8 are: ....

– The common multiples of the two numbers are: ....

....

9 **Complete the following:**

a) Write 5 **multiples** of 8: (........, ..., ..., ..., ...)

b) Write 5 **multiples** of 9: (........, ..., ..., ..., ...)

c) Write 5 **multiples** of 7: (........, ..., ..., ..., ...)

d) Write two **common multiples** of 2 and 6: (........, ...)

e) Write two **common multiples** of 4 and 9: (........, ...)

f) Write two **common multiples** of 8 and 5: (........, ...)

g) If 42 = 6 x 7, then .... is a **multiple** of the two numbers .... and .... Also, ... and .... are **factors** of the number ....

h) If 45 = ... x ...., then .... is a **multiple** of the two numbers 5 and 9. Also, ... and .... are **factors** of the number ....

i) If .... = 8 x 3, then .... is a **multiple** of the two numbers 8 and 3. Also, ... and .... are **factors** of the number ....

j) An **even** number is a multiple of 2, 3, 4 and lies between 20 and 30.
The number is ....

k) An **even** number is a multiple of 3, 5, 10 and lies between 20 and 40.
The number is ....

l) An **odd** number is a multiple of 5 and 9 and lies between 30 and 50.
The number is ....

m) An **odd** number is a multiple of 3 and 7 and lies between 20 and 30.
The number is ....

(n) The relationship between 2, 4, 8 is that ....

(o) The relationship between 2, 5, 10 is that ....

(p) The **common multiples** of 4 and 6 are:

0 , 12 , 24 , 36 , 48 , ... , ... , ...

10 Choose the correct answer from the brackets:

(a) .... is a **factor** of 8. (2 or 16 or 12)

(b) .... is a **multiple** of 8. (2 or 16 or 12)

(c) .... is a **common multiple** of 4 and 6. (12 or 16 or 18)

(d) .... is a **common multiple** of 8 and 3. (15 or 32 or 24)

(e) If 4 X 5 = 20, then 20 is a .... for 4 and 5.

(multiple or factor or sum)

(f) If 7 X 3 = 21, then 3 and 7 are **factors** of the number.................................... .

(7 or 21 or 3)

(g) .... is an **even** number that is a **multiple** of 2, 3, 4 and lies between 20 and 30. (24 or 26 or 28)

(h) .... is an **even** number that is a **multiple** of 2, 4, 5 and lies between 10 and 30. (15 or 20 or 25)

(i) .... is an **odd** number that is a **multiple** of 3 and 5, and it lies between 10 and 30. (15 or 20 or 25)

(j) .... is a multiple of all numbers. (0 or 1 or 2)

Worksheet 3

1 Choose the correct answer:

ⓐ Eight million, eighty **(in Standard Form)**: ....

(8,000,080 or 8,080,000 or 8,800,000)

ⓑ The number 12 is a **common multiple** of 3 and .... (5 or 4 or 9)

ⓒ .... is the best unit for measuring the **length** of an ant.

(Millimeter or Meter or Kilometer)

ⓓ 50 x .... = 20,000. (40 or 400 or 4,000)

ⓔ 40 million x 100 = ... (400 million or 4 billion or 40 billion)

2 Complete the following:

ⓐ The **place value** of the number 9 in the number 59,258,156 is ....

ⓑ 45,568 + 54,432 = ...

ⓒ The number 45,985 rounded to the nearest 100 ≈ ....

ⓓ A square whose **perimeter** is 20 cm, its side length = ... cm.

ⓔ A **common multiple** of the numbers 6, 8 and it lies between the numbers 20 and 30: (..................).

3 Find the multiples of each of the numbers 4 and 6, up to 30. Then find the common multiples between them:

– The multiples of 4 are: ....

– The multiples of 6 are: ....

– The common multiples of the two numbers are: ....

....

4 Shaimaa went to the club at 8:45 am and came back at 10 am. How long did she spend in the club?

....

....

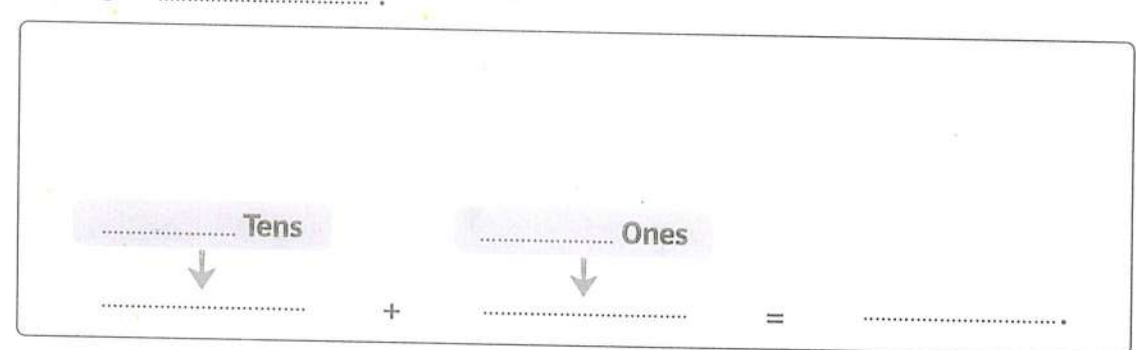
Concept 7.1 Multiplying by 1-Digit and 2-Digit Factors

Exercises on Lesson 1

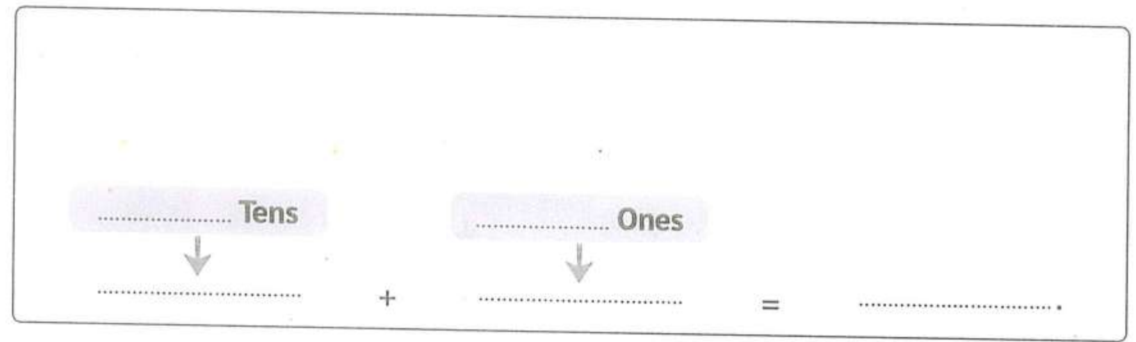
The Area Model Strategy

1 **Multiply using the Base-10 Blocks Strategy:**

ⓐ 35 X 3 = ...



ⓑ 14 X 5 = ...

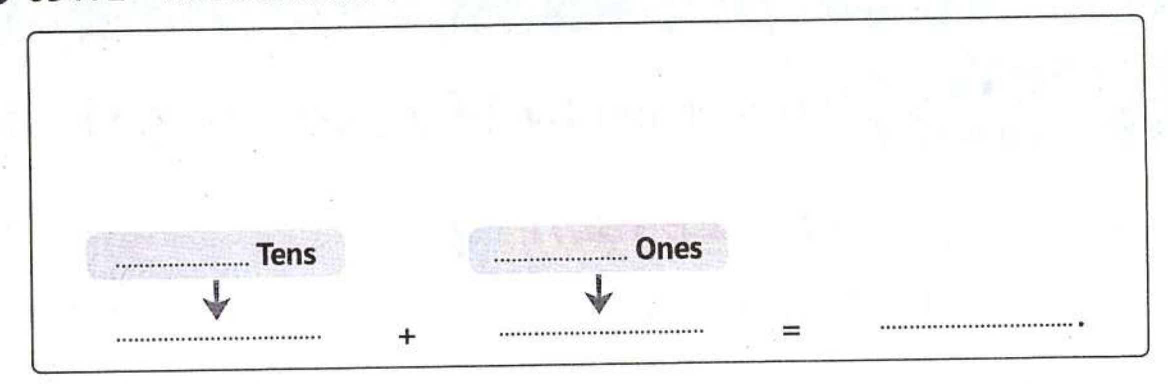


ⓒ 42 X 3 = ...

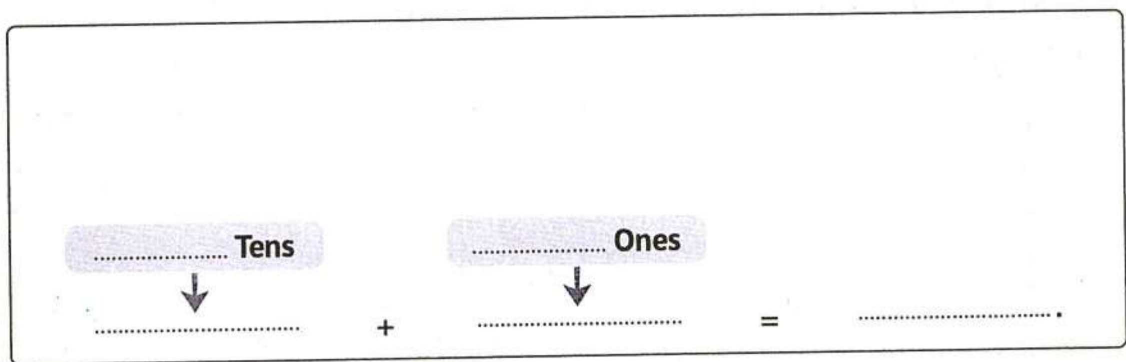
.... Tens .... Ones

.... + ... = ...

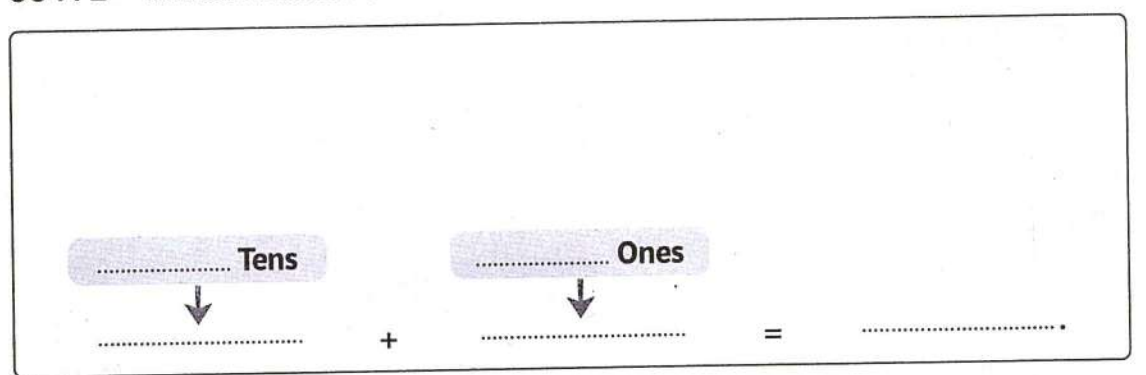
d) 65 X 2 = ...



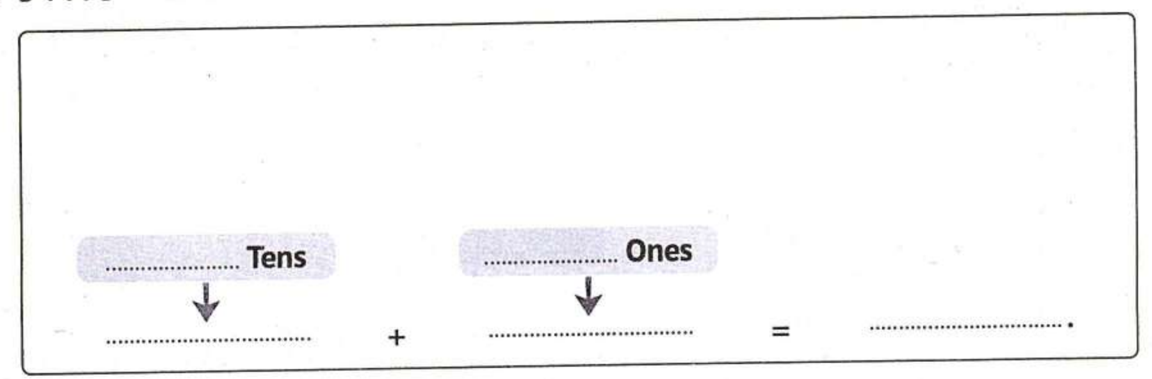
e) 13 X 6 = ...



f) 86 X 2 = ...

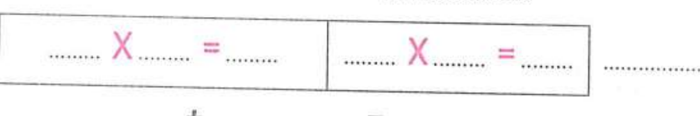


g) 54 X 3 = ...



2 Use the Rectangle Area Model Strategy to multiply:

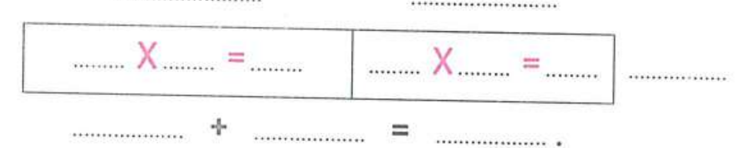
ⓐ 82 X 6 = ...



.... X .... = ... | .... X .... = ...

.... + ... = ...

ⓑ 76 X 3 = ...



.... + ... = ...

ⓒ 63 X 8 = ...

....

.... X .... = ... | .... X .... = ...

.... + ... = ...

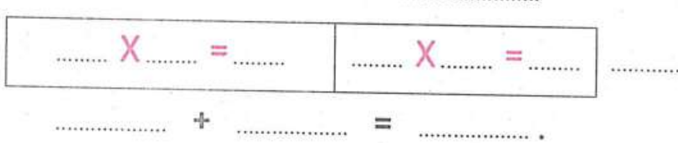
ⓓ 92 X 7 = ...

....

.... X .... = ... | .... X .... = ...

.... + ... = ...

ⓔ 19 X 8 = ...



.... X .... = ... | .... X .... = ...

.... + ... = ...

ⓕ 15 X 9 = ...

....

.... X .... = ... | .... X .... = ...

.... + ... = ...

ⓖ 57 X 3 = ...

....

.... X .... = ... | .... X .... = ...

.... + ... = ...

(h) 99 X 9 = ...

.... X .... = ...	.... X .... = ...

.... + ... = ...

(i) 36 X 5 = ...

.... X .... = ...	.... X .... = ...

.... + ... = ...

(j) 92 X 3 = ...

.... X .... = ...	.... X .... = ...

.... + ... = ...

3 Each bus can accommodate 22 passengers at a time. What is the maximum number of passengers that the bus can carry in 5 trips? (Use the Rectangle Area Model in your solution).

....

.... X .... = ...	.... X .... = ...

.... + ... = ...

4 The length of the bus route is 58 km. How many kilometers would the bus travel if it traveled this route 9 times a day?
(Use the Rectangle Area Model in your solution).

....

.... X .... = ...	.... X .... = ...

.... + ... = ...

5 Hossam saves 85 pounds per month. How much does Hossam save in 6 months? (Use the Rectangle Area Model in your solution).

....

.... X .... = ...	.... X .... = ...

.... + ... = ...

Worksheet 1

1 Choose the correct answer:

ⓐ The **largest** 7-even-digit-number is ....
(9,876,534 or 9,999,999 or 9,999,998)

ⓑ The **smallest odd** prime number is .... (1 or 2 or 3)

ⓒ If $5n = 50$, then n = ... (10 or 0 or 5)

ⓓ 80 X 60 = ... X 100. (86 or 80 or 48)

ⓔ 6 + 6 + 6 + 6 + 6 = 3 X .... (5 or 6 or 10)

2 Complete the following:

ⓐ The **greatest common factor** of 12 and 18 is ....

ⓑ 8 X .... = 40,000.   ⓒ 9,000 – 2,458 = ...

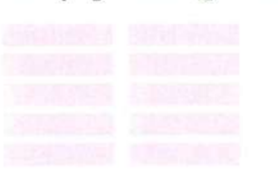
ⓓ 8,050,607 **(in Expanded Notation):** ....

....

ⓔ To compare the numbers 36 and 9: (36 equals .... the number 9).

3 Multiply using the Base-10 Blocks Strategy:

ⓐ



.... Tens   .... Ones

.... X .... = ... + ...

= ....

ⓑ

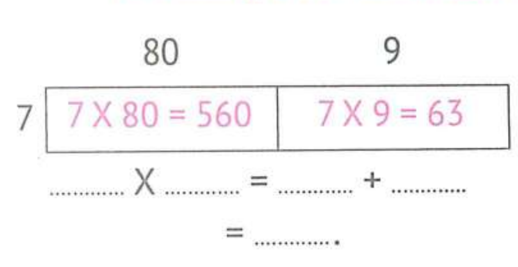
.... Tens   .... Ones

.... X .... = ... + ...

= ....

4 Use the Rectangle Area Model Strategy to multiply:

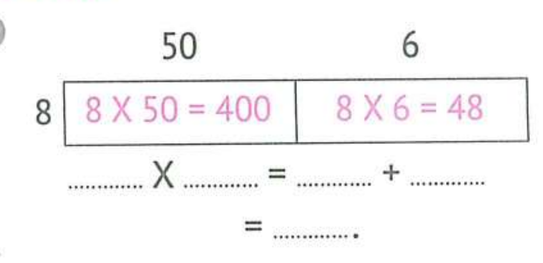
ⓐ



.... X .... = ... + ...

= ....

ⓑ



.... X .... = ... + ...

= ....

Exercises on Lesson 2

The Distributive Property

1 Complete the following:

a) 4 X (8 + 9) = (4 X ....) + (4 x ....).

b) 9 X (................. + ...) = (9 X 3) + (9 X 4).

c) .... X (6 + 5) = (3 X ....) + (3 X ....).

d) 6 X (3 + 4 + 5) = (.......... X ....) + (.......... X ....) + (.......... X ....).

e) 6 X (200 + 90 + 3) = (.......... X ....) + (.......... X ....) + (.......... X ....).

f) 6 X (.......... + ... + ...) = (.......... X 8) + (.......... X 9) + (.......... X 3).

g) .... X (.......... + ... + ...) = (2 X 700) + (2 X 30) + (2 X 9).

2 Use the Distributive Property to solve the following problems:

a) 4 X 31 = 4 X (................. + ...)

= (4 X ....) + (4 X ....)

= .... + ... = ...

b) 6 X 69 = ... X (................. + ... + ...)

= (.......... X ....) + (.......... X ....)

= .... + ... = ...

c) 6 X 485 = ... X (................. + ... + ...)

= (.......... X ....) + (.......... X ....) + (.......... X ....)

= .... + ... + ... = ...

ⓓ 8 X 276 = ... X (.......... + ... + ...)

= (.......... X ....) + (.......... X ....) + (.......... X ....)

= .... + ... + ... = ...

ⓔ 4 X 623 = ... X (.......... + ... + ...)

= (.......... X ....) + (.......... X ....) + (.......... X ....)

= .... + ... + ... = ...

ⓕ 3 X 2,564 = ... X (.......... + ... + ... + ...)

= (..... X .....) + (..... X .....) + (..... X .....) + (..... X .....)

= .... + ... + ... + ... = ...

ⓖ 6 X 4,893 = ... X (.......... + ... + ... + ...)

= (..... X .....) + (..... X .....) + (..... X .....) + (..... X .....)

= .... + ... + ... + ... = ...

ⓗ 7 X 3,892 = ... X (.......... + ... + ... + ...)

= (..... X .....) + (..... X .....) + (..... X .....) + (..... X .....)

= .... + ... + ... + ... = ...

ⓘ 6 X 3,060 = ... X (.......... + ... + ... + ...)

= (..... X .....) + (..... X .....) + (..... X .....) + (..... X .....)

= .... + ... + ... + ... = ...

ⓙ 3 X 8,005 = ... X (.......... + ... + ... + ...)

= (..... X .....) + (..... X .....) + (..... X .....) + (..... X .....)

= .... + ... + ... + ... = ...

3 Use the Area Model of a Rectangle to solve the following problems:

ⓐ 8 X 125 = ...

....

ⓑ 6 X 512 = ...

....

ⓒ 9 X 629 = ...

....

ⓓ 7 X 706 = ...

....

e) 5 X 2,365 = ……………………… .

……………………………………………………………………………………

f) 6 X 1,283 = ……………………… .

……………………………………………………………………………………

g) 9 X 1,822 = ……………………… .

……………………………………………………………………………………

h) 7 X 2,005 = ……………………… .

……………………………………………………………………………………

4 The length of a bus is 1,280 centimeters.
How long are 3 buses? (Use the Distributive Property)

....

....

....

5 Hisham bought 7 kg of oranges, the price of one kilogram was 525 piasters. How much did Hisham pay for the oranges?
(Use the Distributive Property)

....

....

....

6 The distance from Ali's house to the school is 930 meters, and the distance from his house to the club is 5 times the distance between the house and the school. What is the distance between Ali's house and the club? (Use the Rectangle Area Model)

....

....

....

7 Strips of cardboard in the form of rectangles are 185 cm long and 8 cm wide .Find the area of this bar.
(Use the Rectangle Area Model)

....

....

....

Worksheet 2

1 Choose the correct answer:

a) The equation that expresses "n **is equal to three times 8n**" is ....

($n = 3 \times 8$ or $3 \times n = 8$ or $8 \times n = 24$)

b) A square whose side length is 6 cm, then its **area** is .... cm^2.

(30 or 24 or 36)

c) 3 billion, 30 million, 300 = ... **(in Standard Form)**

(3,000,030,300 or 3,030,000,300 or 3,030,300,000)

d) 9 X 60 = 60 X 9. (............ *Property*)

(Commutative or Associative or Distributive)

e) 5 **Billions** = ... **Millions.** (50 or 500 or 5,000)

2 Complete the following:

a) .... is a **common multiple** of 4 and 6 and it lies between 30 and 40.

b) 60 X .... = 30,000.

c) 45 grams = ... centigrams.

d) The number that represents **Ten-millions** in the number: 6,453,289,170 is ....

e) 6 : 45 + 2: 55 = ... : ....

3 Use the Distributive Property to find:

a) 9 X 96 = ...
= ....
= ....

b) 8 X 245 = ...
= ....
= ....

4 Complete by using the following Area of Rectangle Model:

5,000	600	80	9	
8 X 5,000 = 40,000	8 X 600 = 4,800	7 X 80 = 560	7 X 9 = 63	8

= 8 X .... = 8 X (............ + ... + ... + ...)

= (...... X ......) + (...... X ......) + (...... X ......) + (...... X ......)

= .... + ... + ... + ... = ...

Exercises on Lessons 3, 4&5

The Partial Products Algorithm, The Standard Multiplication Algorithm & Connecting Strategies

1 Complete the following:

a) 564 = 500 + 60 + ...

b) 500 + 60 + 4 = ...

c) 9,000 + 500 + 30 + 2 = ...

d) 6,000 + 400 + 80 + 3 = ...

e) 9,000 + 50 = ...

f) 6,000 + 600 = ...

g) 4,000 + 3 = ...

h) 785 = ... + ... + ...

i) 927 = ... + ... + ...

j) 7,859 = ... + ... + ... + ...

k) 8,324 = ... + ... + ... + ...

l) 6,201 = ... + ... + ...

m) 309 = ... + ...

n) 9,006 = ... + ...

o) 8,200 = ... + ...

p) 3,010 = ... + ...

2 Use the Partial Products Algorithm to multiply:

a) **3 X 452 =** ....

```
     452
X      3
--------
.........   (3 X 400)
+ .......   (3 X 50 )
+ .......   (3 X 3  )
--------
.........
```

b) **725 X 4 =** ....

```
     725
X      4
--------
.........   (4 X 700)
+ .......   (4 X 20 )
+ .......   (4 X 4  )
--------
.........
```

ⓒ 6 X 218 = ...

218
X 6
.... (...... X ......)
+ .... (...... X ......)
+ .... (...... X ......)
....

ⓓ 936 X 8 = ...

639
X 8
.... (...... X ......)
+ .... (...... X ......)
+ .... (...... X ......)
....

ⓔ 3 X 1,254 = ...

1,254
X 3
.... (...... X ......)
+ .... (...... X ......)
+ .... (...... X ......)
+ .... (...... X ......)
....

ⓕ 6,152 X 9 = ...

6,152
X 9
.... (...... X ......)
+ .... (...... X ......)
+ .... (...... X ......)
+ .... (...... X ......)
....

ⓖ 3 X 2,908 = ...

2,908
X 3
.... (...... X ......)
+ .... (...... X ......)
+ .... (...... X ......)
+ .... (...... X ......)
....

ⓗ 6,028 X 6 = ...

6,028
X 6
.... (...... X ......)
+ .... (...... X ......)
+ .... (...... X ......)
+ .... (...... X ......)
....

3 Use the Standard Multiplication Algorithm to multiply:

(a) 35 × 8	(b) 69 × 5	(c) 53 × 3
(d) 416 × 4	(e) 835 × 6	(f) 239 × 5
(g) 1,496 × 7	(h) 2,198 × 6	(i) 5,123 × 8
(j) 203 × 6	(k) 1,207 × 3	(l) 3,008 × 4

4 Complete the following table of the multiplication processes and then find the result using the given strategy:

Problem	The Estimation of the Product	Solution Using a Strategy
ⓐ 45 X 3	.... X	Base-10 Blocks Strategy
ⓑ 78 X 9	.... X	Rectangle Area Model
ⓒ 356 X 6	.... X	Distributive Property
ⓓ 3,406 X 8	.... X	Partial Products Algorithm
ⓔ 8,014 X 5	.... X	Standard Multiplication Algorithm

5 **Complete using (< , = or >):**

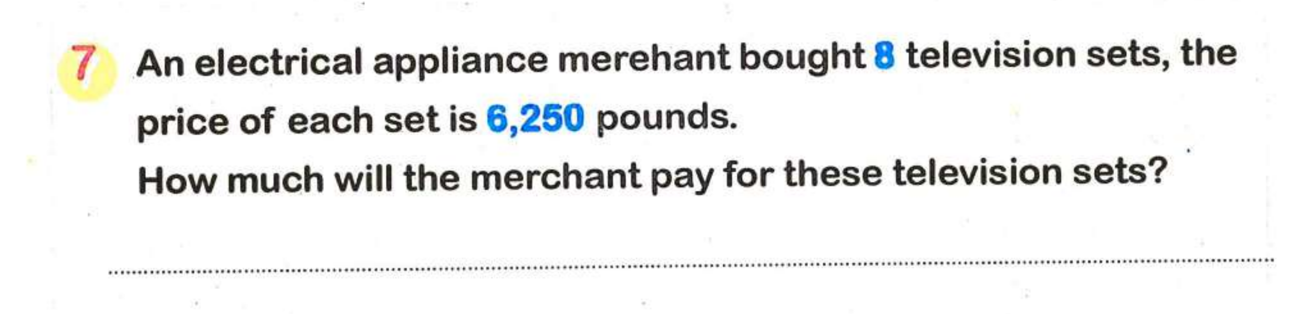
ⓐ 9 X 26		4 X 56	ⓑ 4 X 250		8 X 125
ⓒ 431 X 4		624 X 6	ⓓ 5 X 294		6 X 245
ⓔ 25 X 80		205 X 8	ⓕ 30 X 300		3,012 X 3
ⓖ 752 X 2		7 X 525	ⓗ 365 X 8		600 X 50
ⓘ 8 X 2,500		40 X 500			

6 **Ahmed's family bought 6 kilograms of meat. If the price of one kilogram is 135 pounds, how many pounds did the family pay?**

....

....

....



7 **An electrical appliance merehant bought 8 television sets, the price of each set is 6,250 pounds.**
How much will the merchant pay for these television sets?

....

....

....

8 **The day is 24 hours, how many hours are there in a week?**

....

....

....

Worksheet 3

1 Choose the correct answer:

a) A billion is the **smallest** number consisting of .... digits. (7 or 9 or 10)

b) 5 X (400 + 3 + 70) = 5 X .... (437 or 473 or 374)

c) 805 X .... = 3,220. (4 or 6 or 7)

d) 5,000 + 20 + 3 = ... (523 or 5,023 or 5,000,203)

e) If $8 + \chi = 3 \times 8$, then χ = ... (3 or 8 or 16)

2 Complete the following:

a) .... is the **greatest common factor** of **12** and **18**.

b) 400 X .... = 16,000.

c) Two weeks and three **days** = ... **days.**

d) The **place value** of the digit **6** in the number 53,106,720 is ....

e) 6 X (2 + 50 + 400) = (6 X ....) + (6 X ....) + (6 X ....).

3 Complete using (< , = or >):

a) 5 X 502 ☐ 5 X 205

b) 45 m ☐ 4,500 cm

c) 20 X 50 ☐ 8 X 125

d) 456,258 + 543,742 ☐ The **greatest** 7-digit-number

e) 5 **Millions** ☐ 5,000 **Hundreds**

4 Arrange the following numbers in a **descending order**:

45,500,000 , 54,005,000 , 45,000,050 , 54,000,500

The order : .... , ... , ... , ...

5 A train has **8** cars. If the number of seats in one car is **64**. How many seats will the train have?

....

....

Exercises on Lesson 6

Two-Digit Multiplication

1 Find the product using the Rectangle Area Model:

ⓐ 82 X 26 = ...

.... X .... = ...	.... X .... = ...

.... + ... = ...

ⓑ 30 X 25 = ...

.... X .... = ...	.... X .... = ...

.... + ... = ...

ⓒ 38 X 60 = ...

.... X .... = ...	.... X .... = ...

.... + ... = ...

ⓓ 90 X 38 = ...

.... X .... = ...	.... X .... = ...

.... + ... = ...

ⓔ 60 X 96 = ...

.... X .... = ...	.... X .... = ...

.... + ... = ...

ⓕ 37 X 40 = ...

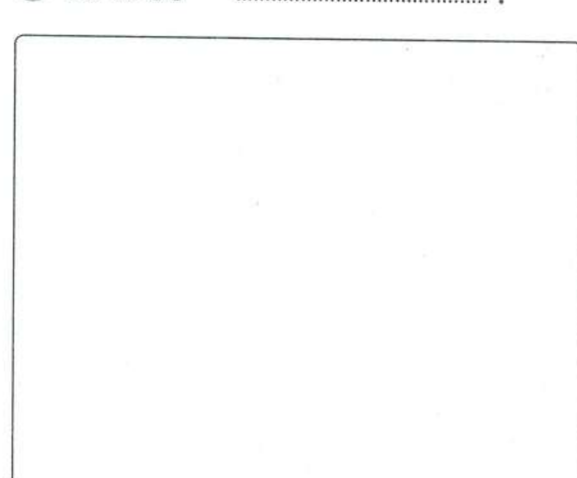
.... X .... = ...	.... X .... = ...

.... + ... = ...

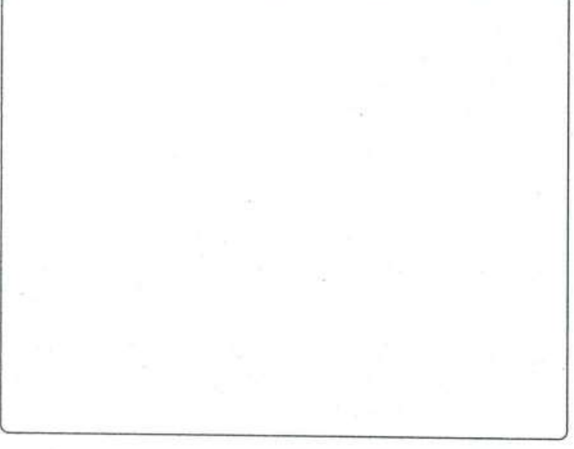
2 Use the Rectangle Area Model Strategy to multiply:

ⓐ 83 X 90 = ...

ⓑ 35 X 60 = ...



ⓒ 48 X 20 = ...



ⓓ 40 X 17 = ...

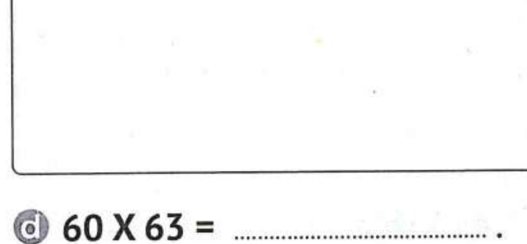
ⓔ 60 X 86 = ...

ⓕ 68 X 50 = ...

3 Use the **Distributive Property** to solve the following problems:

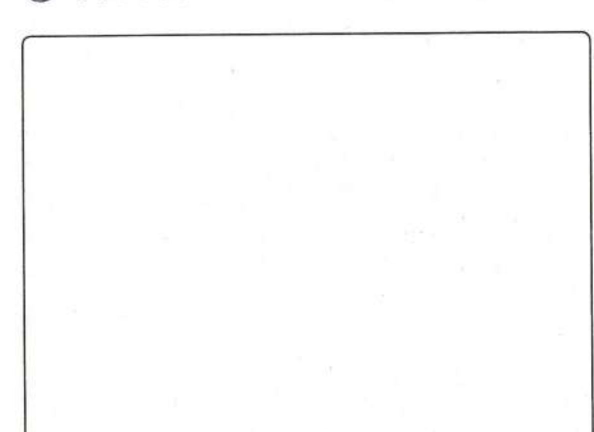
ⓐ 90 X 15 = ...

ⓑ 20 X 68 = ...



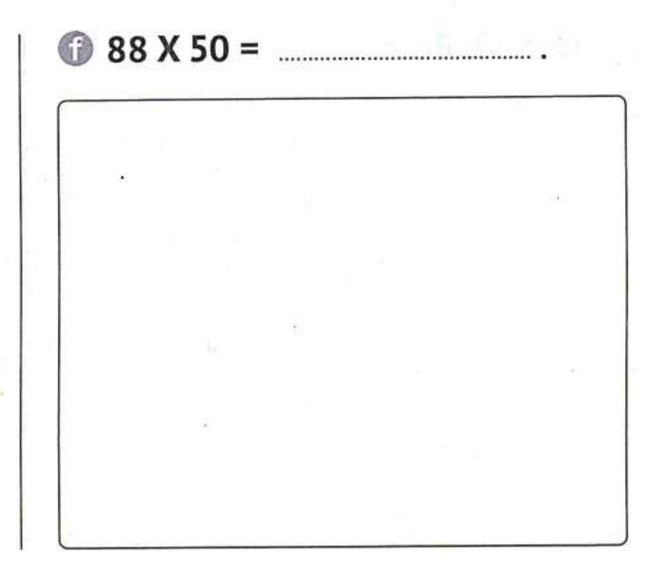
ⓒ 80 X 29 = ...

ⓓ 60 X 63 = ...



ⓔ 99 X 30 = ...

ⓕ 88 X 50 = ...



4 Find the product:

ⓐ 12 X 60 = ...   ⓑ 80 X 14 = ...

ⓒ 40 X 25 = ...   ⓓ 90 X 42 = ...

ⓔ 80 X 55 = ...   ⓕ 30 X 96 = ...

ⓖ 95 X 60 = ...   ⓗ 80 X 45 = ...

5 Emad bought 20 pens of the same type. If the price of one pen is 95 piasters, what is the amount of money that Emad will pay?

....

....

....

....

6 A merchant has 35 boxes of fruits. If each box contains 20 kilograms, what is the mass of all boxes?

....

....

....

....

7 Souad bought 20 meters of a piece cloth. If the price of one meter is 65 pounds, what is the price of the whole piece of cloth?

....

....

....

....

Worksheet 4

1 Choose the correct answer:

a) A square has a perimeter of **36** cm, then its **area** is .... cm^2.
(9 or 12 or 81)

b) .... kg = 70,000 grams. (7 or 70 or 700)

c) 30 X .... = 3,600. (12 or 120 or 1,200)

d) The property used in: 8 X (3 + 7) = (8 X 3) + (8 X 7) is ....
Property. (Commutative or Associative or Distributive)

e) (8 **Hundreds** and 6 **Tens**) x 100 = ...
(860,000 or 86,000 or 8,006,000)

2 Complete the following:

a) .... is a **prime** number that lies between **50** and **60** ,and its **Ones** digit is greater than its **Tens** digit.

b) The factors of **21** are: .... , ... , ... , ...

c) 60 X .... = 300,000

d) 8 + 8 + 8 + 8 + 8 = 5 X ....

e) (6 X 1,000,000) + (3 X 10,000) + (4 X 100) + (3 X 1) = ...

3 Find the result:

a) 45,268 + 15,832 = ...

b) 80,600 – 25,087 = ...

c) 782 X 4 = ...

d) 90 X 15 = ...

4 An apartment building has 20 floors. If each floor has 18 apartments, what is the total number of apartments in the building?

....

....

Exercises on Lessons 7&8

Area Models and 2-Digit Multiplication & Algorithms and 2-Digit Multiplication

1 Use the **Rectangle Area Model** to find the product:

ⓐ 36 X 45

= .... + ... + ... + ...

= ....

X	....	....
....	.... X .... = ...	.... X .... = ...
....	.... X .... = ...	.... X .... = ...

ⓑ 65 X 28

= .... + ... + ... + ...

= ....

X	....	....
....	.... X .... = ...	.... X .... = ...
....	.... X .... = ...	.... X .... = ...

ⓒ 28 X 61

= .... + ... + ... + ...

= ....

X	....	....
....	.... X .... = ...	.... X .... = ...
....	.... X .... = ...	.... X .... = ...

ⓓ 69 X 37

= .... + ... + ... + ...

= ....

X	....	....
....	.... X .... = ...	.... X .... = ...
....	.... X .... = ...	.... X .... = ...

ⓔ 45 X 95

= .... + ... + ... + ...

= ....

X	....	....
....	.... X .... = ...	.... X .... = ...
....	.... X .... = ...	.... X .... = ...

ⓕ 89 X 23

= .... + ... + ... + ...

= ....

X	....	....
....	.... X .... = ...	.... X .... = ...
....	.... X .... = ...	.... X .... = ...

ⓖ 67 X 76

= .... + ... + ... + ...

= ....

X	....	....
....	.... X .... = ...	.... X .... = ...
....	.... X .... = ...	.... X .... = ...

ⓗ 68 X 36

= .... + ... + ... + ...

= ....

X	....	....
....	.... X .... = ...	.... X .... = ...
....	.... X .... = ...	.... X .... = ...

3 Use the Standard Multiplication Algorithm to multiply:

ⓐ 65 X 28 = ...

65
X 28
.... (65 X 8)
+ .... (65 X 20)
....

ⓑ 39 X 93 = ...

39
X 93
.... (93 X 9)
+ .... (93 X 30)
....

ⓒ 75 X 31 = ...

75
X 31
.... (............... X ....)
+ .... (............... X ....)
....

ⓓ 36 X 13 = ...

36
X 13
.... (............... X ....)
+ .... (............... X ....)
....

ⓔ 92 X 27 = ...

92
X 27
.... (............... X ....)
+ .... (............... X ....)
....

ⓕ 84 X 36 = ...

84
X 36
.... (............... X ....)
+ .... (............... X ....)
....

2 Use the Partial Products Algorithm to multiply:

ⓐ 24 X 36 = ...

```
      24
X     36
---------
.........   (4  X 6  )
+ .........   (4  X 30 )
+ .........   (20 X 6  )
+ .........   (20 X 30 )
---------
.........
```

ⓑ 72 X 46 = ...

```
      72
X     46
---------
.........   (2  X 6  )
+ .........   (2  X 40 )
+ .........   (70 X 6  )
+ .........   (70 X 40 )
---------
.........
```

ⓒ 64 X 18 = ...

```
      64
X     18
---------
.........   ( ........ X ........ )
+ .........   ( ........ X ........ )
+ .........   ( ........ X ........ )
+ .........   ( ........ X ........ )
---------
.........
```

ⓓ 83 X 39 = ...

```
      83
X     39
---------
.........   ( ........ X ........ )
+ .........   ( ........ X ........ )
+ .........   ( ........ X ........ )
+ .........   ( ........ X ........ )
---------
.........
```

ⓔ 98 X 26 = ...

```
      98
X     26
---------
.........   ( ........ X ........ )
+ .........   ( ........ X ........ )
+ .........   ( ........ X ........ )
+ .........   ( ........ X ........ )
---------
.........
```

ⓕ 75 X 52 = ...

```
      75
X     52
---------
.........   ( ........ X ........ )
+ .........   ( ........ X ........ )
+ .........   ( ........ X ........ )
+ .........   ( ........ X ........ )
---------
.........
```

4 Find the product of the multiplication of each of the following:

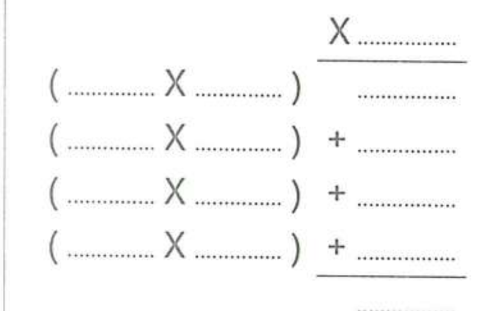
Begin by **estimating** the product of the multiplication and then **solve** the problems using the **Partial Product Algorithm** and the **Standard Multiplication Algorithm**.

ⓐ 97 X 38 = ...

Estimation:

....
X ....
....

Partial Product Algorithm:



....
X ....
(............ X ....) ....
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
....

Standard Algorithm:

....
X ....
(............ X ....) ....
(............ X ....) + ...
....

ⓑ 85 X 14 = ...

Estimation:

....
X ....
....

Partial Product Algorithm:

....
X ....
(............ X ....) ....
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
....

Standard Algorithm:

....
X ....
(............ X ....) ....
(............ X ....) + ...
....

ⓒ 56 X 27 = ...

Estimation:

....
X ....
....

Partial Product Algorithm:

....
X ....
(............ X ....) ....
(............ X ....) + ...
(............ X ....) + ...
(............ X ....) + ...
....

Standard Algorithm:

....
X ....
(............ X ....) ....
(............ X ....) + ...
....

5. Ahmed bought 16 pens. If the price of one pen is 95 piasters, what is the price of all pens?

(Use the Area of a Rectangle Model to solve)

X	....	....
....	.... X .... = ...	.... X .... = ...
....	.... X .... = ...	.... X .... = ...

.... X .... = ... + ... + ... = ...

6. 55 persons will travel together by bus, and the price of one ticket is 45 pounds. What is the price of the tickets for all passengers?

(Use the Area of a Rectangle Model to solve)

X	....	....
....	.... X .... = ...	.... X .... = ...
....	.... X .... = ...	.... X .... = ...

.... X .... = ... + ... + ... = ...

7. If the price of a piece of chocolate is 12 pounds.
What is the price of 45 pieces of chocolate of the same kind?

....

....

....

....

Worksheet 5

1 Choose the correct answer:

a) Three hundred and fifty million, three hundred fifty: ....
(in Standard Form). (350,350 or 350,000,350 or 350,350,000)

b) 45 X 40 .... 30 X 60. (> or = or <)

c) The **largest** number formed from the digits (9, 6, 3, 0, 1, 8) is .... (986,310 or 103,689 or 986,301)

d) (4 X 5) + (4 X 20) + (30 X 5) + (30 X 20) = ... X ....
(34 X 25 or 42 X 35 or 32 X 45)

e) 500 **Ten-thousands** = ... **Millions.** (500 or 50 or 5)

2 Complete the following:

a) .... is the **smallest odd** prime number

b) The **multiples** of 6 to 20 are: .... , ... , ... , ...

c) The **place value** of the number 3 in the number 23,456,028 is ....

d) The area of a rectangle is 28 cm^2 and its length is 4 cm, then its **perimeter** is .... cm.

e) 9,000,000,000 + 5,000,000 + 6,000 + 2 = ...

3 Complete the following:

a)
```
     68
X    50
-------
.......
```

b)
```
     45
X    24
-------
.......
+ .....
-------
.......
```

c)
```
  40,000
-  2,568
--------
........
```

d)
```
  45,208
+ 35,792
--------
........
```

4 The day is 24 hours. How many hours are there in 30 days?

....

Exercises on Lesson 9

Putting It All Together

1. Aya draws paintings and sells them at art galleries. She charges 56 pounds for the large painting, and 24 pounds for the small painting. Last month, Aya sold six large paintings and three small paintings. How many pounds did Aya get for selling the paintings?

Answer: ....

....

....

....

2. A fruit merchant sold 98 kilograms of bananas and 80 kilograms of oranges. The price of one kilogram of bananas is 12 pounds, and the price of one kilogram of oranges is 10 pounds.
How much pounds did the merchant get for selling the fruits?

Answer: ....

....

....

....

3. Saleh drives for 2 hours and travels 240 km. Maher drives for 3 hours and travels 300 km. Adam also drives for 3 hours, but he travels 55 kilometers less than Maher. How many kilometers do they all drive?

Answer: ....

....

....

....

4 On Earth Day, workers planted 65 seedlings per hour. They worked for 3 hours and then took a break. After the break, they worked for another two hours but only planted 55 seedlings per hour. How many seedlings did they plant in 5 hours?

Answer: ....

....

....

5 There are about 27 car accidents per day in Egypt. The United States has about 62 times the number of car accidents per day. How many accidents are there per week in the United States?

Answer: ....

....

....

6 Youssef reads 27 pages every night for a week.
Aya reads 62 page every night for a week.
How many pages do they both read in a week?

Answer: ....

....

....

7 There are 500 tickets available for sale for one of the shows.
65 tickets were sold on Monday and 55 tickets on Tuesday.
How many tickets are left for sale?

Answer: ....

....

....

8 Samah is planning a bike race. The length of one lap of the track is 126 kilometers. Competitors must do three laps around the track and then ride another 12 kilometers to the finish line. What is the race distance that Samah must travel?

Answer: ....

....

....

9 Jasmine bought 12 large sticker books. There were 96 stickers in each book. She gave 300 stickers to her friends.
How many stickers does Jasmine have left?

Answer: ....

....

....

10 How many minutes are there in a day? And how many minutes are there in a week?

Answer: ....

....

....

Worksheet 6

1 Choose the correct answer:

a) If .... is rounded to the nearest **10**, the result is **5,600**. (5,655 or 5,596 or 5,608)

b) 50 X 60 .... 30 X 100. (> or = or <)

c) If 45 + a = 45, then a = ... (0 or 1 or 2)

d) 8 X 900 = ... X 100. (8 or 9 or 72)

e) A **gold ring**, its **mass** is approximately .... (3 kg or 3 gm or 3 cm)

2 Complete the following:

a) A rectangle has a width of **5** cm, and its length is **twice** its width. Then its **area** is .... cm^2.

b) The value of the digit 5 in the **Billions** place = ... times the value of the digit 5 in the **Ten-thousands** place.

c) The equation that represents "**45 is 9 times the number** a" is: ....

d) The **G.C.F.** for **48** and **36**, is ....

e) (7 X 6) + (7 X 80) + (7 X 300) = 7 X ....

3 Find the result:

a) 415 X 5 = ...

b) 96 X 30 = ...

c) 76 X 12 = ...

d) 90 X 450 = ...

4 Hazem bought 12 pens and 25 notebooks. If the price of one pen is 3 pounds and the price of one notebook is 7 pounds. How much did Hazem pay the seller for the pens and notebooks?

....

....

Concept 7.2 Dividing by 1-Digit Divisors

Exercises on Lessons 10&11

Exploring Remainders & Patterns and Place Value in Division

1 Complete the following table:

Problem	Dividend	Divisor	Quotient	Remainder
a 8 ÷ 4	....	....	....	....
b 9 ÷ 2	....	....	....	....
c 15 ÷ 5	....	....	....	....
d 28 ÷ 4	....	....	....	....
e 36 ÷ 6	....	....	....	....
f 35 ÷ 8	....	....	....	....
g 25 ÷ 4	....	....	....	....
h 31 ÷ 5	....	....	....	....
i 42 ÷ 8	....	....	....	....
j 48 ÷ 6	....	....	....	....

2 Complete the following table:

Equation	Related Fact	Related Fact
ⓐ 400 ÷ 4	....	....
ⓑ 8,000 ÷ 2	....	....
ⓒ 90,000 ÷ 3	....	....
ⓓ 420 ÷ 7	....	....
ⓔ 350 ÷ 5	....	....
ⓕ 3600 ÷ 4	....	....
ⓖ 27,000 ÷ 9	....	....
ⓗ 240,000 ÷ 8	....	....
ⓘ 60,000 ÷ 3	....	....
ⓙ 18,000 ÷ 6	....	....

3 Find the quotient:

ⓐ 90 ÷ 3 = ...

ⓑ 64,000 ÷ 8 = ...

ⓒ 600 ÷ 2 = ...

ⓓ 27,000 ÷ 9 = ...

ⓔ 450 ÷ 5 = ...

ⓕ 400,000 ÷ 5 = ...

ⓖ 1,800 ÷ 5 = ...

ⓗ 540,000 ÷ 6 = ...

ⓘ 2,400 ÷ 6 = ...

ⓙ 3,500,000 ÷ 5 = ...

4 Complete using (< , = or >):

ⓐ 450 ÷ 5		350 ÷ 7	ⓑ 4,000 ÷ 5		2,000 ÷ 5
ⓒ 1,000 ÷ 2		400 ÷ 4	ⓓ 20,000 ÷ 4		30,000 ÷ 6
ⓔ 20,000 ÷ 5		28,000 ÷ 8	ⓕ 8,100 ÷ 9		450 ÷ 5
ⓖ 1,500 ÷ 3		2,400 ÷ 6	ⓗ 4,800 ÷ 6		64,000 ÷ 8
ⓘ 400 ÷ 8		300 ÷ 5	ⓙ 2,500 ÷ 5		45,000 ÷ 9

5 Complete the following:

ⓐ If 5 X 8 = 40 , then 4,000 ÷ 5 = ...

ⓑ If 6 X 7 = 42 , then 42,000 ÷ 6 = ...

ⓒ If 3 X 4 = 12 , then 120 ÷ 3 = ...

ⓓ If 2 X 9 = 18 , then 180,000 ÷ 9 = ...

ⓔ If 5 X 4 = 20 , then 20,000 ÷ 4 = ...

6 Saleem brought 15 pancakes to give to four of his friends. How can Saleem divide the pancakes evenly?

....

....

....

7 A teacher has 21 candy bars and wants to distribute them equally among 5 students. How many candy bars will each student get?

....

....

....

8 32 persons would like to attend a special event in Zamalek District. There are several different ways to go to this event. Participants can only choose one way to allow the whole group to go. Look at the means of transportation in the following table that they can use.

Means of Transportation	The Number of People Allowed in Each Means of Transportation	The Problem	Number of People Left
a Microbus	9	....	....
b Tuk Tuk	3	....	....
c Car	4	....	....
d Van	7	....	....

9 Issam wants to put 52 cups in boxes and ship them.
Each box holds 6 cups.
How many boxes are needed to ship the cups?

....

....

10 Ahmed distributed 12,000 pounds equally among his three sons.
What is the share of each son?

....

....

11 Emad spent 24,000 equally within six days.
How many pounds did Emad spend in one day?

....

....

....

Worksheet 7

1 Choose the correct answer:

a) If 8 X 3 = 24, then 2,400 ÷ 8 = ... (3 or 30 or 300)

b) 3,200 ÷ 4 .... 8,000 ÷ 8. (> or = or <)

c) 3,200 ÷ .... = 400. (8 or 80 or 800)

d) 8 **kg** and 45 **grams** = ... **grams**. (80,450 or 8,045 or 8,450)

e) 5,000 **Ten** = ... **Thousands**. (5 or 50 or 500)

2 Complete the following:

a) The perimeter of a square is 12 cm, then its **area** is .... cm^2.

b) 4,256 = ... + ... + ... + ...(in Expanded Form)

c) The **factors** of 28 are: .... , ... , ... , ...

d) The **remainder** of 32 ÷ 6 is ....

e) If 8 X 4 = 32, then 32,000 ÷ 8 = ...

3 Complete the following table:

Problem	Dividend	Divisor	Quotient	Remainder
a) 45 ÷ 6	....	....	....	....
b) 32 ÷ 8	....	....	....	....
c) 14 ÷ 2	....	....	....	....
d) 23 ÷ 5	....	....	....	....
e) 68 ÷ 8	....	....	....	....

4 A school has 240 students divided into 8 classes equally.

How many students are there in each class?

....

....

Exercises on Lesson 12

The Area Model and Division

1 Find the quotient in each of the following:

(Use the Area of Rectangle Model)

ⓐ 70 ÷ 5

.... X .... = ...	.... X .... = ...

....

....

....

....

70 ÷ 5 = ...

ⓑ 64 ÷ 4

.... X .... = ...	.... X .... = ...

....

....

....

....

64 ÷ 4 = ...

ⓒ 98 ÷ 2

.... X .... = ...	.... X .... = ...

....

....

....

....

98 ÷ 2 = ...

ⓓ 56 ÷ 3

.... X .... = ...	.... X .... = ...

....

....

....

....

56 ÷ 3 = ...

ⓔ 76 ÷ 6

.... X .... = ...	.... X .... = ...

....

....

....

....

76 ÷ 6 = ...

ⓕ 68 ÷ 5

.... X .... = ...	.... X .... = ...

....

....

....

....

68 ÷ 5 = ...

g) 587 ÷ 4

....

....

....

h) 876 ÷ 6

....

....

....

i) 615 ÷ 5

....

....

....

j) 3,200 ÷ 4

....

....

....

k) 360 ÷ 4

....

....

....

2 Use the Rectangle Area Model to solve the following, show your steps.

ⓐ An organization donated 89 books to a school. The books will be divided among 6 classes. How many books will each class take?

....

....

....

ⓑ Rashida saved 545 pounds to buy a car. She was saving 5 pounds every day she worked. How many days did she have to work to save enough money to buy a car?

....

....

....

ⓒ Amir bought a book of stickers. The book contains 92 stickers. Amir wanted to give the stickers to 4 of his friends.

How many stickers will each of his friends get?

....

....

....

ⓓ There are 492 cars that need to use the stadium parking lot.

The stadium contains 4 parking lots.

Each parking lot must contain the same number of cars evenly.

....

....

....

Worksheet 8

1 Choose the correct answer:

a. The **Additive Neutral Element** is .... (0 or 1 or 2)

b. The **smallest odd** prime number is .... (1 or 2 or 3)

c. The **largest even** number formed from 7 different digits is .... (9,876,543 or 9,999,998 or 9,876,534)

d. 4 **liters and** 15 **milliliters** = ... **milliliters.** (4,150 or 4,015 or 40,015)

e. 80 X .... = 1,600. (2 or 20 or 200)

2 Complete the following:

a. The **factors** of 16 are: .... , ... , ... , ... , ...

b. The **place value** of the digit 6 in the number 256,125,334 is ....

c. One **week** and two **days** = ... **days.**

d. .... is a **common multiple** of 6 and 10 and it lies between 20 and 40.

e. 9 million, twenty-five thousand, three **(in Standard Form)**: ....

3 Find the quotient and complete the Rectangle Area Model:

a. 76 ÷ 4

.... X .... = ...	.... X .... = ...	.... X .... = ...

....

....

....

....

76 ÷ 4 = ...

b. 144 ÷ 6

.... X .... = ...	.... X .... = ...

....

....

....

....

144 ÷ 6 = ...

4 Salma wants to divide 85 candy bars between 5 of her friends equally. How many candy bars will each friend get?

....

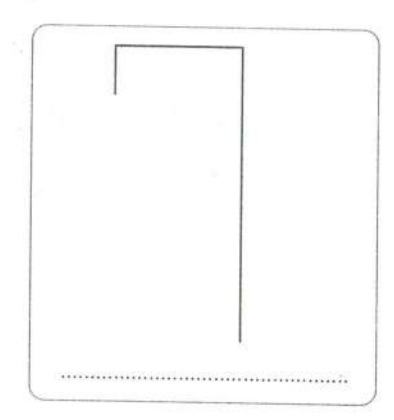
....

Exercises on Lesson 13

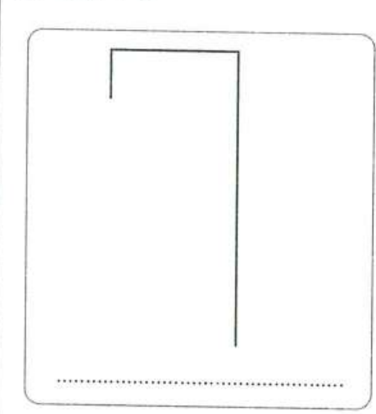
The Partial Quotients Algorithm

1 Use the Partial Quotient Algorithm to divide:

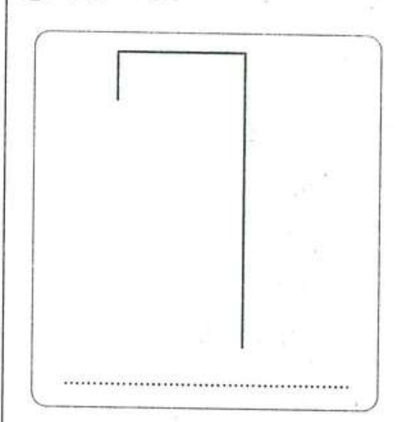
ⓐ 52 ÷ 4



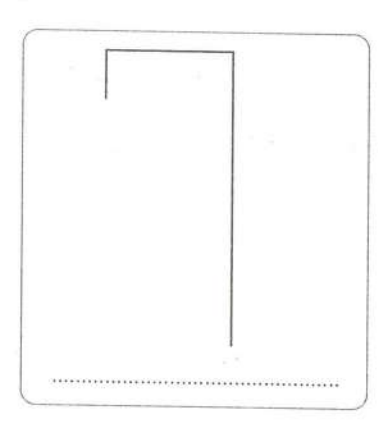
ⓑ 90 ÷ 5



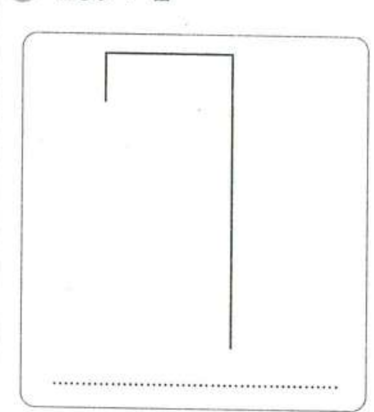
ⓒ 92 ÷ 8



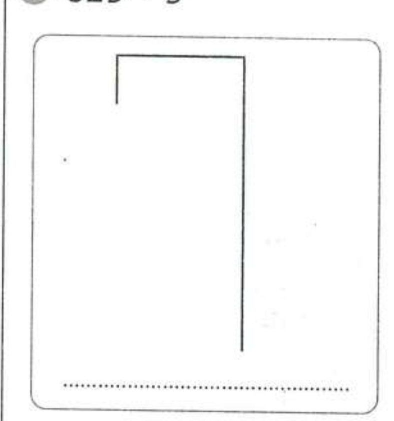
ⓓ 936 ÷ 6



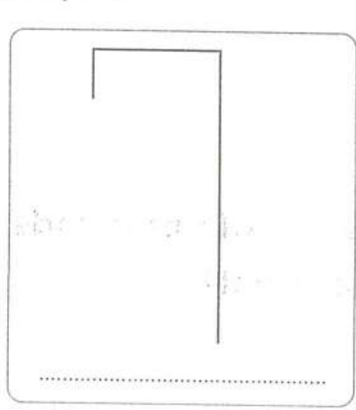
ⓔ 289 ÷ 2



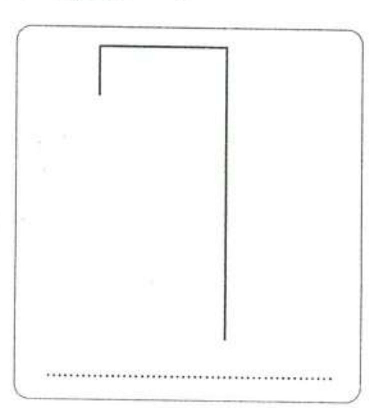
ⓕ 825 ÷ 3



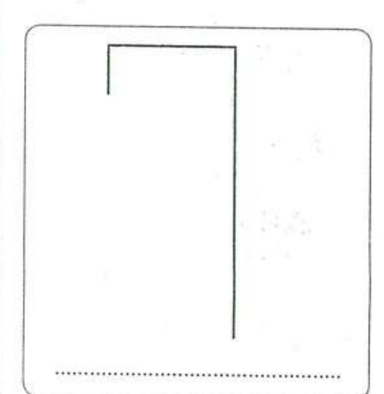
ⓖ 6,456 ÷ 4



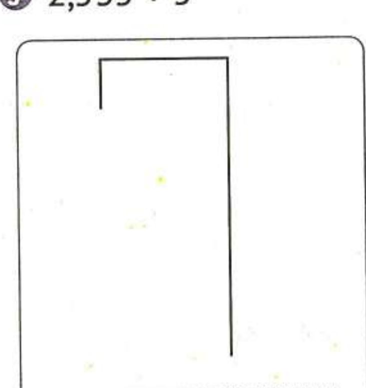
ⓗ 3,585 ÷ 5



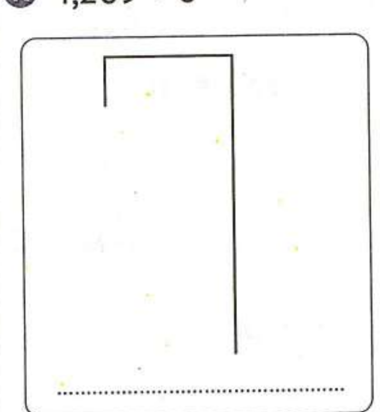
ⓘ 9,508 ÷ 7



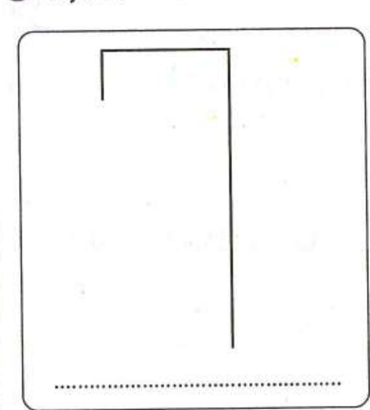
j) 2,535 ÷ 5



k) 4,209 ÷ 6



l) 8,407 ÷ 7



2 Write the **division problem** that matches each **Rectangle Area Model**. Then solve the problem using the **Partial Quotient Algorithm**:

a)

Rectangle Area Model:

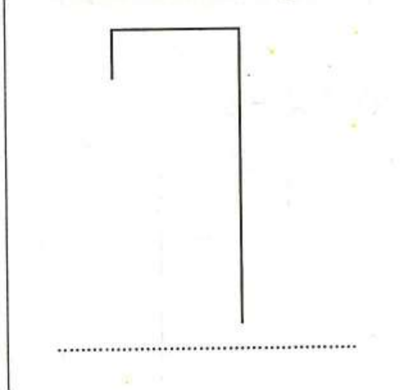
4 X 20 = 80	4 X 3 = 12	4
20	3	

....

Division Problem:

....

Partial Quotient Algorithm:



....

b)

Rectangle Area Model:

3 X 10 = 30	3 X 7 = 21	3
10	7	

The remainder of the division is 2.

Division Problem:

....

Partial Quotient Algorithm:

....

ⓒ

Rectangle Area Model:

6 X 100 = 600	6 X 40 = 400	6 X 3 = 18	6
100	40	3	

....

Division Problem:

....

Partial Quotient Algorithm:

....

ⓓ

Rectangle Area Model:

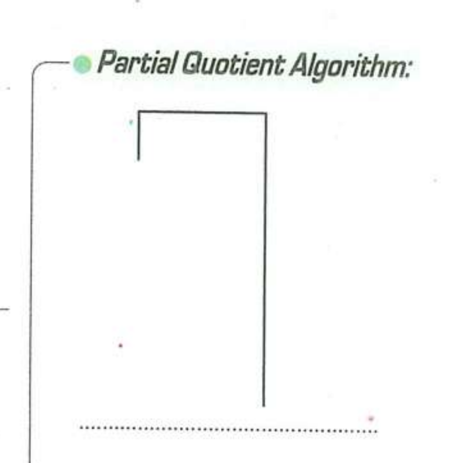
5 X 100 = 500	5 X 30 = 150	5 X 6 = 35	5
100	30	7	

The remainder of the division is 3.

Division Problem:

....

Partial Quotient Algorithm:



....

ⓔ

Rectangle Area Model:

6 X 400 = 2,400	6 X 60 = 360	6 X 7 = 42	6
400	60	7	

....

Division Problem:

....

Partial Quotient Algorithm:

....

3 A piece of land in the form of a rectangle has an area of 96 square meters. If its width is 8 meters, find its length.

(Use the Partial Quotient Algorithm)

....

....

....

....

....

4 Eman wants to distribute 1,548 among 6 persons equally.

What is the share of each person?

(Using the Partial Quotient Algorithm)

....

....

....

....

....

5 A tourism company has prepared 5 buses to transport 175 tourists to visit the pyramids area.

How many tourists will be in each bus?

(Use the Partial Quotient Algorithm)

....

....

....

....

....

Worksheet 9

1 Choose the correct answer:

ⓐ If the **place value** of the digit 5 is the **Ten-thousands**, then its **value** is .... (50 or 50,000 or 50,000,000)

ⓑ 2,400 ÷ 4 .... 3,000 ÷ 6. (> or = or <)

ⓒ If $5a = 45$, then a = ... (45 or 9 or 40)

ⓓ The best unit for measuring the **length** of an **insect** is .... (meter or centimeter or millimeter)

ⓔ 8 X 500 = 4 X .... (10 or 100 or 1,000)

2 Complete the following:

ⓐ The area of a square is 25 cm^2, then its **perimeter** is .... cm.

ⓑ 45 + 99 = ... + 100.

ⓒ The **remainder** of 93 ÷ 6 is ....

ⓓ The **G.C.F.** for numbers 12 and 18 is ....

ⓔ (5 X 6) + (5 X 20) + (40 X 6) + (40 X 20) = 45 X ....

3 Use the Partial Quotient Algorithm to divide:

ⓐ 72 ÷ 4

....

ⓑ 245 ÷ 5

....

ⓒ 3,542 ÷ 6

....

4 There are 72 students on the playground and we need to divide them into 6 teams. How many students will be in each team?

....

....

Exercises on Lessons 14&15

The Standard Division Algorithm & Division and Multiplication

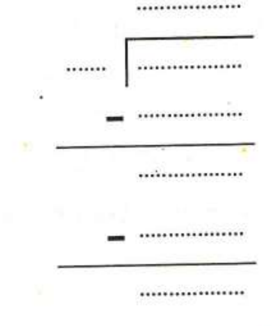
1 Complete the following table:

	Problem	The dividend is between	The quotient is between
a	64 ÷ 2	.... and	.... and ....
b	87 ÷ 3	.... and	.... and ....
c	124 ÷ 4	.... and	.... and ....
d	105 ÷ 5	.... and	.... and ....
e	324 ÷ 3	.... and	.... and ....
f	864 ÷ 7	.... and	.... and ....
g	2,472 ÷ 6	.... and	.... and ....
h	3,648 ÷ 8	.... and	.... and ....
i	9,245 ÷ 5	.... and	.... and ....
j	7,206 ÷ 3	.... and	.... and ....

2 Divide using the Standard Division Algorithm:

a) 65 ÷ 5 = ...

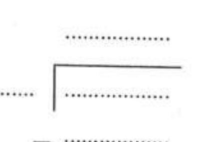
b) 96 ÷ 6 = ...



c) 94 ÷ 4 = ...

d) 136 ÷ 4 = ...

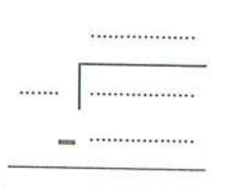
e) 225 ÷ 3 = ...



f) 248 ÷ 5 = ...

g) 828 ÷ 6 = ...

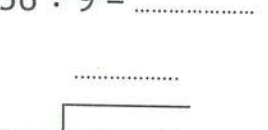
h) 744 ÷ 3 = ...



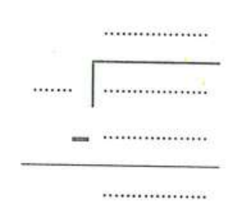
i) 954 ÷ 7 = ...

j) 1,256 ÷ 8 = ...

k) 2,236 ÷ 9 = ...



l) 4,025 ÷ 5 = ...



m) 9,756 ÷ 2 = ...

n) 4,254 ÷ 6 = ...

o) 9,024 ÷ 3 = ...

3 Complete the following table:

	Problem	The Quotient is between	Number of Digits of the Quotient	Using the Standard Division Algorithm
a	68 ÷ 4 = ...	.... and	....	
b	135 ÷ 5 = ...	.... and	....	
c	868 ÷ 7 = ...	.... and	....	
d	3,570 ÷ 5 = ...	.... and	....	
e	9,827 ÷ 3 = ...	.... and	....	

4 A train has 784 passenger seats. If the train has 7 cars and each car has the same number of seats. How many passengers can be seated in each car?

(Solve the problem using at least two different strategies)

First Strategy:

Second Strategy:

....

....

5 There are 567 books in a library distributed over 3 cupboards. How many books are there in each cupboard?

(Solve the problem using at least two different strategies)

First Strategy:

Second Strategy:

....

....

6 A school has 144 boys and 216 girls. They are divided into 8 classes equally. How many students are there in each class?

....

....

Worksheet 10

1 Choose the correct answer:

ⓐ The estimation of 49,286 using the strategy **Front-end Strategy**, is .... (50,000 or 49,000 or 40,000)

ⓑ 45 ÷ 3 .... 56 ÷ 4. (> or = or <)

ⓒ The value of the digit 5 in the **Ten-thousands** place = ... times the value of the digit 5 in the **Tens** place. (10 or 100 or 1,000)

ⓓ 245 + 110 = ... + 245. (110 or 245 or 355)

ⓔ 45,000 ÷ .... = 9,000. (500 or 50 or 5)

2 Complete the following:

ⓐ 200 **minutes** = 3 **hours** and .... **minutes.**

ⓑ 9 X 300 = ... X 100.

ⓒ 9,456 – 2,367 = ...

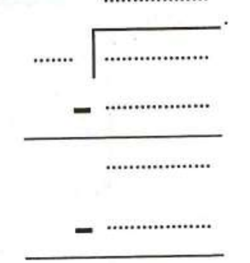
ⓓ The prime number that comes **after** 19 is ....

ⓔ (45 X 5) + (45 X 60) = 45 X ....

3 Divide using the Standard Division Algorithm:

ⓐ 92 ÷ 4 = ...

ⓑ 340 ÷ 5 = ...



ⓒ 8,491 ÷ 7 = ...

4 A hotel consists of 215 rooms distributed equally among 5 floors. How many rooms are there on each floor?

....

....

Exercises on Lesson 16

Solving Challenging Story Problems

1 Amira bought 4 boxes of pencils. In each box, there are 28 pencils. She also had 3 smaller boxes of pencils in her house. In each box, there are 12 pencils. Amira wanted to bring all the pencils to school and give them to 4 of her friends. How many pencils will each friend have?

What happens in the problem? ....

What are the values in the problem? ....

What questions can be asked in this problem? ....

Answer: ....

....

....

2 Reem wants to read a 500-page book. The first week, she read 135 pages. The second week, she read 195 pages.
How many pages are remaining for her to read?

What happens in the problem? ....

What are the values in the problem? ....

What questions can be asked in this problem? ....

Answer: ....

....

....

3 Jasmine wants to organize her books from greatest number of pages to the least number of pages.
Jasmine's longest book has 1,400 pages. Her shortest book has 376 fewer pages than the longest.
If the book in the middle of her shelf has three times the number of pages of the shortest book, then how many pages does the book in the middle have?

What happens in the problem? ....

What are the values in the problem? ....

What questions can be asked in this problem? ....

Answer: ....

....

4 Ahmed serves ice cream at a local ice cream shop.
He sold 19 ice cream cones on Saturday, 27 ice cream cones on Sunday, and 153 ice cream cones on the remaining days.
How many ice cream cones did Ahmed sell on the weekdays?

What happens in the problem? ....

What are the values in the problem? ....

What questions can be asked in this problem? ....

Answer: ....

....

5 There are 1,421 tourists that visit the pyramids every weekend.
How many tourists visit the pyramids in 8 weekends?

What happens in the problem? ....

What are the values in the problem? ....

What questions can be asked in this problem? ....

Answer: ....

....

6 A teacher bought 12 packs of crayons. Seven of the packs had 9 crayons in them. The other 5 had 10 crayons in each.

How many crayons did the teacher buy in all?

What happens in the problem? ....

What are the values in the problem? ....

What questions can be asked in this problem? ....

Answer: ....

....

....

7 Aliaa discovered a buried treasure box. She opened it up and found that it contained 682 diamonds and 117 rubies. She sold 45 diamonds and bought 130 emeralds.

How many gems does she have now?

What happens in the problem? ....

What are the values in the problem? ....

What questions can be asked in this problem? ....

Answer: ....

....

....

8 Four families went to the zoo. Each family has 2 adults and 2 children. Each child's ticket costs 14 LE and each adult's ticket costs 22 LE.

How much will the zoo tickets cost in total?

What happens in the problem? ....

What are the values in the problem? ....

What questions can be asked in this problem? ....

Answer: ....

....

9 Sarah received 352 LE for her birthday. She found some toys that costed 8 LE each. How many toys could she buy?

What happens in the problem? ....

What are the values in the problem? ....

What questions can be asked in this problem? ....

Answer: ....

....

10 There are 164 persons who play wind instruments and 20 persons who play percussion in a band. If the band instructor puts 8 students in each row. How many rows will there be?

What happens in the problem? ....

What are the values in the problem? ....

What questions can be asked in this problem? ....

Answer: ....

....

Worksheet 11

1 Choose the correct answer:

a. The number 24,150 rounded to the nearest 1,000 ≈ ....
(20,000 or 24,000 or 25,000)

b. 50 X 600 .... 300 X 100. (> or = or <)

c. Three billion, thirty thousand, three hundred **(in Standard Form)**: ....
(3,030,300 or 3,000,030,300 or 3,030,000,300)

d. The **smallest** two-digit prime number is .... (11 or 10 or 3)

e. 360 ÷ .... = 60. (6 or 60 or 600)

2 Complete the following:

a. Two **weeks** and three **days** = ... **days.**

b. The number that comes right **after** 25,999 is ....

c. 75,269 + 24,731 = ...

d. If 270÷ 6 = 45, then the divisor is .... and the dividend is ....

e. 26 X 53 = (................ X 3) + (................ X 50).

3 Find the result of each of the following:

a. 45,263 + 15,337 = ...

b. 90,250 – 24,036 = ...

c. 29 X 32 = ...

d. 890 ÷ 5 = ...

4 Arrange the following numbers in a descending order:

352,025 , 523,205 , 253,520 , 352,250

The order : .... , ... , ... , ...

5 A school has 81 boys, and the number of girls is 5 times the number of boys. The students are divided into 9 classes. How many students are there in each class?

....

....

Unit 8 Order of Operations

Concept 8.1 Order of Operations

Exercises on Lessons 1-4

Problem-solving Strategies, Which Comes First?, Order of Operations & The Order of Operations and Story Problems

1 **Follow the order of operations to solve the following problems:**

ⓐ 15 + 5 + 7 = ... = ...	ⓑ 9 + 11 + 16 = ... = ...	ⓒ 9 – 6 – 3 = ... = ...
ⓓ 12 – 2 – 5 = ... = ...	ⓔ 8 + 7 – 10 = ... = ...	ⓕ 9 + 8 – 7 = ... = ...
ⓖ 7 + 9 – 6 = ... = ...	ⓗ 24 – 5 + 3 = ... = ...	ⓘ 15 – 7 + 2 = ... = ...
ⓙ 21 – 9 + 11 = ... = ...	ⓚ 5 X 2 X 9 = ... = ...	ⓛ 8 X 5 X 6 = ... = ...

m 45 ÷ 5 ÷ 3 = ... = ...	n 63 ÷ 9 ÷ 7 = ... = ...	o 5 X 8 ÷ 4 = ... = ...
p 6 X 6 ÷ 9 = ... = ...	q 5 X 2 ÷ 5 = ... = ...	r 48 ÷ 8 X 5 = ... = ...
s 72 ÷ 9 X 6 = ... = ...	t 32 ÷ 4 X 5 = ... = ...	

2 Follow the order of operations to solve the following problems:

a 8 X 5 + 7 = ... = ...	b 9 X 4 + 14 = ... = ...	c 4 X 8 – 5 = ... = ...
d 4 X 8 – 9 = ... = ...	e 7 + 2 X 9 = ... = ...	f 6 + 3 X 2 = ... = ...
g 12 – 3 X 3 = ... = ...	h 25 – 3 X 7 = ... = ...	i 7 + 8 ÷ 2 = ... = ...

j) $6 + 18 \div 3$

= ....

= ....

k) $48 \div 8 + 5$

= ....

= ....

l) $63 \div 7 + 21$

= ....

= ....

m) $36 \div 9 - 3$

= ....

= ....

n) $42 \div 7 - 5$

= ....

= ....

o) $12 - 10 \div 2$

= ....

= ....

p) $15 - 14 \div 7$

= ....

= ....

3 **Follow the order of operations to solve the following problems:**

a) $8 + 5 + 7 + 3$

= ....

= ....

b) $25 - 8 - 3 - 6$

= ....

= ....

c) $2 \times 5 \times 3 \times 6$

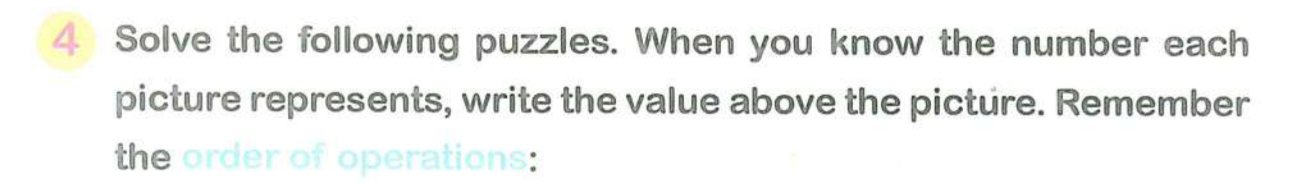
= ....

= ....

d) $48 \div 2 \div 4 \div 3$

= ....

= ....



4 Solve the following puzzles. When you know the number each picture represents, write the value above the picture. Remember the order of operations:

ⓐ

+ + = 15

x + = 28

+ x = 23

x + = ...

= ...., = ..., = ...

ⓑ

+ + = 24

x x = 72

x + = 29

x + = ...

= ...., = ..., = ...

ⓒ

+ + = 18

x + = 19

+ x = 27

x + = ...

= ...., = ..., = ...

ⓓ

+ + = 21

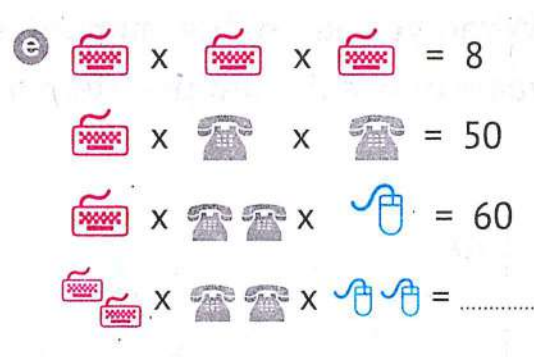
+ x = 28

x + = 38

+ + = ...

= ......, = ..., = ...

e



x x = 8

x x = 50

x x = 60

x x = ...

= ...., = ..., = ...

f

+ + = 30

+ + = 32

+ + = 40

+ + = ...

= ......, = ..., = ...

g

+ + = 30

x + = 42

+ x = 54

x + = ...

= ......, = ..., = ...

h

+ + = 36

+ x = 26

x + = 35

+ x = ...

= ......, = ..., = ...

5 Follow the order of operations to solve the following problems:

ⓐ $7 \times 3 + 5 \times 6$

= ....

= ....

ⓑ $6 \times 3 + 2 \times 5$

= ....

= ....

ⓒ $4 \times 8 - 3 \times 7$

= ....

= ....

ⓓ $9 \times 7 - 4 \times 6$

= ....

= ....

ⓔ $12 \div 4 + 15 \div 3$

= ....

= ....

ⓕ $18 \div 6 + 24 \div 8$

= ....

= ....

ⓖ $36 \div 9 - 24 \div 8$

= ....

= ....

ⓗ $45 \div 5 - 42 \div 7$

= ....

= ....

6 Follow the order of operations to solve the following problems:

ⓐ $6 \times 8 + 2 \times 5 + 4 \times 7$

= ....

= ....

= ....

ⓑ $3 \times 9 - 4 \times 2 - 5 \times 2$

= ....

= ....

= ....

ⓒ $24 \div 3 + 30 \div 6 + 24 \div 8$

= ....

= ....

= ....

ⓓ $48 \div 2 + 35 \div 7 - 64 \div 8$

= ....

= ....

= ....

(e) 5 + 4 X 3 – 7 = ... = ... = ...	(f) 40 – 4 + 2 X 8 = ... = ... = ...
(g) 3 X 5 + 4 X 3 – 9 = ... = ... = ...	(h) 8 + 35 ÷ 5 – 3 X 4 = ... = ... = ...

7 Use numbers and symbols to represent what happens in each problem and then solve it (remember the order of operations):

(a) There are 194 persons in a concert. After the party, 50 persons left in cars. The rest of them want to go home by microbus. If each microbus has seats for 9 persons, how many microbuses are needed for everyone to get home?

....

....

....

(b) Bilal bought 6 bags of balloons. Each bag contains 18 balloons. He wants to give balloons to his friends at his birthday party. If he has 8 friends at the party, how many balloons will each friend take?

....

....

....

Guide Answers

Guide Answers

Unit 1

Lesson 1

Digit, Numeral, Number

1

		Digit	Number	numeral
a	369		✓	✓
b	24		✓	✓
c	9	✓	✓	✓
d	Forty six			✓
e	2,000		✓	✓
f	6,330,265		✓	✓
g	Eight			✓
h	7	✓	✓	✓
i	88		✓	✓
j	0	✓	✓	✓
k	Three hundred seventeen			✓
l	Ninety			✓

2 97,540 , 40,579

3 a Ten-thousands. b Hundred-thousands.
c Tens. d Hundreds.
e Ones.

4 a > b > c > d =

Lesson 2

Really Big Numbers!

1 a 27 Millions, 254 Thousands, 985.
Twenty seven million, two hundred fifty four thousand, nine hundred eighty five.
b 1 Milliard (Billion), 390 Millions, 402 Thousands, 650.
One Milliard (Billion), three hundred ninety million,
four hundred two thousand, six hundred fifty.

2 a 45,120,123 b 259,024,000
c 275,000,229 d 9,109,056,002
e 3,000,215,028

3 a 9 , 445 , 325 b 925 , 23 , 7
c 24 , 0 , 305 d 6 , 25 , 7 , 0
e 8 , 29 , 0 , 28

4 a Hundred-thousands.
b Tens. c Milliards (Billions).
d Ones. e Millions.
f Hundred-millions.

5 a 2,587,924,388 b 25,348,975
c 962,525,252

6 a 345,823,622 b 9,909,909
c 253,332

Lesson 3

Changing Values

1 a 4 , Ones. b 2,000 , Thousands.
c 7,000,000 , Millions.
d 500 , Hundreds. e 0 , Hundred-thousands.
f 9,000,000,000 , Billions.

2 a 300 b 70,000,000
c 500 d 600,000
e 500 f 80

Lesson 4

Comparing Values

1 a 500 b 6,000
c 8 d 10,000
e hundred-thousands.
f hundreds. g 100 h 100

2 a 43 X 10 = 430 b 230 X 100 = 23,000
c 1,000 × 5,600 = 5,600,000
d 90,805 X 10 = 908,050
e 900 X 1,000 = 900,000
f 24,000 X 100 = 2,400,000
g 25,000,000 X 10 = 250,000,000

3 a 10,000,000 b 7
c 9,999,999,999 d 9,876,543
e 50,600 f 98,743,210
g 30,456,789 h 9,999,998
i 600,000 j ten-thousands.

Lesson 5

Many Ways to Write

1. a. Seventeen million, two hundred thousand, five hundred twenty three.
   b. One hundred million , twenty thousand, forty five.
   c. 20,100,459: Twenty million, one hundred thousand, four hundred fifty nine.
   d. 7,000,050,200: Seven milliard (billion), fifty thousand, two hundred.
2. a. 5,025,203 b. 3,006,004,004
   c. 9,040,080,206 d. 7,000,500,200
3. a. 40,000,000 + 300,000 + 100 + 2
   b. 7,000,000,000 + 80,000+ 6
   c. 7,000,000,000 + 50,000 + 200
   d. 100,000,000 + 50,000,000 + 20,000 + 9,000 + 300 + 10 + 6
4. a. Two hundred three million, five hundred thousand, two hundred.
   200,000,000 + 3,000,000 + 500,000 + 200
   b. 5,004,019,675,
   5,000,000,000 + 4,000,000 + 10,000 + 9,000 + 600 + 70 + 5
   c. 120,090,308
   One hundred twenty million, ninety thousand, three hundred eight.

Lesson 6

Composing and Decomposing

1. a. 8,027,050,006.
   (8 X 1,000,000,000) + (2 X 10,000,000) + (7 X 1,000,000) + (5 X 10,000) + (6 X 1).
   b. 6,000,920,590.
   6 Milliards (Billions), 0 Millions, 920 Thousands, 590.
   c. (2 X 10,000,000) + (1 X 10,000) + (4 X 1,000) + (2 X 10) + (3 X 1).
   20 Millions , 14 Thousands , 23.
2. a. 80,070,021 b. 2,000,098,500
   c. 900,250,209
3. a. 60,000,000+ 7,000,000 +100,000 + 20,000 + 5,000 + 10 + 2.
   b. 7,000,000 + 20,000 + 4,000 + 600 +50.
   c. 70,000,000+ 5,000,000 + 30,000 + 400 + 60.
4. a. (6 X 1,000,000,000) + (9 X 100,000,000). + (1 X 10,000) + (4 X 1).
   b. (8 X 1,000,000) + (7 X 10,000) + (2 X 100).
   c. (1 X 10,000,000) + (2 X 100,000) + (5 X 100) + (4 X 10) + (8 X 1).
   d. (2 X 1,000,000) + (2 X 100,000) + (5 X 10) + (7 X 1).

Lesson 7

Comparing Really Big Numbers

1. a. > b. > c. < d. > e. =
2. (Many answers can be written).
   a. 600,000 b. 300
   c. 6,000,000 d. 30,000
3. (Many answers can be written).
   a. 200,000 , 300,000
   b. 300,000 , 100,000
   c. 72,000,000 d. 7,500,000,000
   e. 100,000,000 , 200,000,000

Lesson 8

Comparing Numbers in Multiple Forms

1. a. = b. > c. < d. < e. >
2. (Many answers can be written)
   a. 8,000,000 b. 10,000,000
3. (Many answers can be written).
   a. 100,000,000 + 500,000
   b. 10,000,000 + 500,000
4. (Many answers can be written).
   a. (3 X 10,000) b. (6 X 1,000,000)
5. (Many answers can be written)
   a. Four hundred thousand.
   b. One million.

Lesson 9

Descending and Ascending Numbers

1. a) 520,000 ، 502,000 ، 250,000 ، 205,000
   b) 643,205 ، 436,250 ، 364,250 ، 346,205
2. a) 100,000 ، 900,900 ، 999,999 ، 9,000,000
   b) 78,090 ، 78,091 ، 78,999 ، 79,010 ، 79,100
3. a) (3) 3,010,002,050 b) (4) 3,100,020,005
   c) (2) 3,001,200,500 d) (5) 3,100,200,100
   e) (1) 3,001,002,005
4. a) (3) 4,000,060,007 b) (2) 4,000,600,070
   c) (1) 4,000,600,700 d) (4) 4,000,006,700
   e) (5) 4,000,006,070

Lesson 10

Predicting the Unpredictable

1. a) 40,000,000 b) 3,000,000,000
   c) 7,000,000,000 d) 3,000,000
   e) 10,000,000

Lesson 11

Rounding Rules

First: The midpoint strategy:

1. a) Midpoint: 235 → 238 ≈ 240.
   b) Midpoint: 95 → 98 ≈ 100.
2. a) Midpoint: 250 → 278 ≈ 300.
   b) Midpoint: 7,450 → 7,429 ≈ 7,400.
3. a) Midpoint: 4,500 → 4,500 ≈ 5,000.
   b) Midpoint: 11,500 → 11,157 ≈ 11,000.
4. a) Midpoint: 9,500,000 → 9,208,504 ≈ 9,000,000.
   b) Midpoint: 22,500,000
   22,699,205 ≈ 23,000,000.

Second: The place-value strategy:

1. a) 260 b) 370
   c) 70 d) 100
   e) 12,260 f) 124,000
2. a) 800 b) 6,900
   c) 71,900 d) 1,000
   e) 30,000 f) 1,500
3. a) 16,000 b) 90,000
   c) 1,000,000 d) 453,000,000
   e) 669,460,000 f) 7,000,000,0
4. a) 70 , 10 + 50 = 60 (✗) ,
   10 + 60 = 70 (✓)
   b) 415 , 100 + 200 = 300 (✗) ,
   200 + 200 = 400 (✓)
   c) 572 , 200 + 200 = 400 (✗) ,
   300 + 300 = 600 (✓)
   d) 5,911 , 3,000 + 2,000 = 5,000 (✗) ,
   3,000 + 3,000 = 6,000 (✓)

Unit 2

Lesson 1

Properties of Addition and Subtraction

1. a) Commutative. b) Neutral Element.
   c) Associative. d) Commutative.
   e) Neutral Element.
   f) Associative.
2. a) 3 , Commutative.
   b) 17 ,Commutative.
   c) 5 , Neutral Element.
   d) 0 , Neutral Element.
   e) 3 , Associative. f) 25 , 20 , Associative.
3. a) 48 , 48 , Associative.
   b) 214 , 214 , Neutral Element.
   c) 86 , 86 , Associative.
   d) 35 , 35 , Associative and Neutral Element.

Lesson 2

Mental Math Strategies

1. a) 60 , 80 b) 10 , 20
   c) 230 , 240 d) 300 , 300
   e) 4,000 , 3,000
2. a) 54 b) 101

c 644 d 29
e 43 f 148

3 a 190 b 562
c 51 d 302

4 a 8 b 10
c 95

5 a Compensation , 113.
b Compensation , 26.
c Counting Up , 7.
d Composing and Decomposing , 329.
e Composing and Decomposing , 609.
f Compensation , 199.

Lesson 3

Addition with Regrouping

1 a 89,900 b 9,030,290
c 10,000,000 d 11,110
e 1,000,005 f 1,010,511,000

2 a 14,102 , 14,100 (✓) , 14,100 (✓) , 14,000 (✗).
b 9,872 , 9,870 (✓) , 9,900 (✗) , 10,000 (✗).

3 Estimation: 140 + 170 = 310.
Actual Answer: 142 + 165 = 307.

4 Estimation: 400 + 500 = 900.
Actual Answer: 383 + 462 = 845.

5 Estimation: 2,000 + 2,000 = 4,000.
Actual Answer: 2,420 + 2,420 = 4,840.

Lesson 4

Subtraction Strategies

1 a 491 b 3,845
c 2,999 d 8,950

2 a 262 b 4,063
c 2,899 d 8,202

Lesson 5

Subtraction with Regrouping

1 a 1,431 b 13,187

2 a 2,142 , 2,000 b 28,422 , 30,000

3 15,422,140 – 6,350,300 = 9,071,840
15,000,000 – 6,000,000 = 9,000,000

4 255,000 – 6,200 = 248,800

5 3,548 – 1,672 = 1,876 6 3,452 – 1,267 = 2,185

Lesson 6

Bar Models, Variables and Story Problems

1 a Equation: x = 8,500 – 6,250
Solution: x = 2,250

8,500	
x	6,250

b Equation: x = 2,050 – 985
Solution: x = 1,065

2,050	
x	985

c Equation: y = 4,200 – 3,350
Solution: y = 850

4,200	
y	3,350

d Equation: a = 90,950 + 750,500
Solution: a = 841,450

a	
90,950	750,500

2 a Solution: x = 7,120 – 5,200
x = 1,920

7,120	
x	5,200

b Solution: y = 22,120 + 18,850
y = 40,970

y	
22,120	18,850

c Solution: a = 6,000 – 812
a = 5,188

6,000	
812	a

d Solution: w = 7,600 – 4,455
w = 3,145

7,600	
w	4,455

Lesson 7

Solving Multistep Story Problems with Addition and Subtraction

1 1,075 + 1,120 + 1,325 = 3,520
6,853 – 3,520 = 3,333

2 59,000 + 27,525 + 32,975 = 119,500
150,000 –119,500 = 30,500

3 320,000 + 200,000 = 520,000
520,000 – 420,195 = 99,805

Unit 3

Lesson 1

Ant Travel

1 a centimeter. b kilometer.
c millimeter. d kilometer.
e meter.

2

a	b	c
5,000	2	9
6	900	50
20,000	30	70
35	40,000	600

3 a 840 cm. b 5,020 cm.
c 7,070 m. d 15,120 m.
e 3 m , 72 cm. f 10 m , 5 cm.
g 9 km , 300 m. h 70 km , 20 m.

4 a 625 cm. b 9,032 cm
c 4,138 m. d 14,225 m.
e 4 m , 25 cm. f 20 m , 3 cm.
g 7 km , 529 m. h 900 m , 50 cm.

5 100,000 cm = 1,000 m = 1 km.

6 15 dm = 1,500 mm.

7 500 ÷ 50 = 10 minutes.
50 × 30 = 1,500 m.

Lesson 2

The Weight Can Wait

1 a kilogram. b gram.
c gram. d kilogram.

2

a Gram	Kilogram	b Gram	Kilogram
2,000	2	9,000	9
15,000	15	5,000	5
61,000	61	12,000	12

3 a 9,105 grams. b 32,008 grams.
c 8 kg , 235 gm. c 41 kg, 623 gm.

4 a 6,000 gm. b 200,000 gm.
c 90 kg. d 200 kg.
e 3 kg 624 gm. f 67 kg 26 gm.
g 5,583 gm. h 50,009 gm.

5 45,200 gram.

6 5 kg = 5,000 gm , 7 kg = 7,000 gm.
The sum = 5,000 + 500 + 7,000 = 12,500 gm.

Lesson 3

Fill It Up

1

a	b
50,000	8,000
200	7
520,000,000	18,000

2 a 35,020 mm. b 9,252 milliliter.
c 3 liter 22 milliliter.
d 200 liter 200 milliliter.

3 a 3,000 milliliter. b 50,000 milliliter.
c 700 liter. d 15 liter.
e 7 liter 320 milliliter.
f 20 liter 8 milliliter.
g 11,011 milliliter.
h 10,002 milliliter.

4 45 liter = 45,000 milliliter.
30 liter , 250 milliliter = 30,250 milliliter.
Amount of gasoline = 30,250 – 45,000
= 14,750 milliliter.

5 2,500 milliliter ، 1,250 milliliter.
Amount of juice = 2,500 + 1,250
= 3,750 milliliter.

6 2 liter = 2,000 milliliter.
The amount of soda water = 2,000 – (320 + 250)
= 2,000 – 570
= 1,430 milliliter.

Lesson 4

Measurement and Unit Conversions

1 a 3 X 100 = 300 cm.
b 120 ÷ 10 = 12 dekameters.
c 50 X 10 = 500 centigrams.
d 1,200 ÷ 10 = 120 grams.
e 2,000 ÷ 100 = 20 deciliters.
f 42 X 100 = 4,200 liters.

2. a. 200 , 20 b. 400 , 40
c. 250 , 2500 d. 700 , 70
e. 120 , 1,200 f. 500 , 50

3. 400 m = 40,000 cm.

4. 4,000 milliliters = 4 liters.

Lesson 5

What time is it?

1. Answer by yourself.

2. a. 7 , 21 , 35 , 49 , 63
b. 24 , 96 , 144 , 192 , 240
c. 60 , 120 , 300 , 480 , 600
d. 60 , 180 , 360 , 420 , 540

3. a. 16 b. 178
c. 87 d. 130
e. 335 f. 650
g. 305

4. a. 2,6 b. 6,3
c. 2,2 d. 5,10
e. 2,30 f. 5,30
g. 1,30 h. 10,5

5. 3 + 4 = 7 days.
7 days = 168 hours.

6. 3 + 2 + 4 = 9 hours.
9 hours = 540 minutes.

Lesson 6

How long does it take?

1. a. 9 : 00 b. 8 : 10
c. 6 : 42 d. 4 : 33
e. 9 : 50 f. 6 : 27

2. 8 : 45 + 1 : 25 = 9 : 70
= 10 : 10

3. 3 : 30 + 2 : 45 = 5 : 75
= 6 : 15

4. 1 : 22 + 2 : 12 + 1 : 57 = 4 : 91
= 5 : 31

Lesson 7

Scaled Measurement

1. a. 9 x 5 = 45
5 x 9 = 45
45 ÷ 5 = 9
45 ÷ 9 = 5

b. 3 x 8 = 24
8 x 3 = 24
24 ÷ 3 = 8
24 ÷ 8 = 3

2. a. 15 b. 60 minutes.
c. 150 minutes. d. 135 minutes.
e. 105 minutes. f. 8 students.
g. 18 students.

Lessons 8&9

Measuring the World Around Me

1. Weight of potatoes and onions:
- 2,950 – 1,075 = 1,875 gm.
- 2,950 + 1,875 = 4,825 gm.

2. 12 weeks = 84 days.
The difference = 84 – 45 = 39 days.

3. 20,000 ml = 20 l.
100 – 20 = 80 l.

4. 8,000 + 1,000 + 500 + 225 + 275
= 19,000 gm = 19 kg.

5. 12 ÷ 3 = 4 m = 400 cm.

6. 4 X 500 = 2,000 ml
= 2 l.
2 X 7 = 14 l.

7. 5 X 500 = 2,500 gm.
100,000 + 2,500 = 102,500 gm.

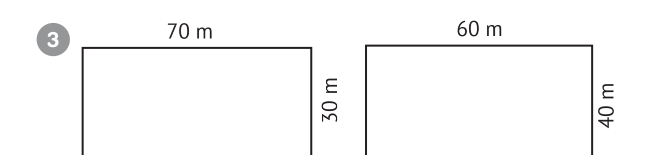
Unit 4

Lesson 1

Marching Ants

1. a. 26 cm. b. 78 cm. c. 100 cm.

2. a. 140 cm. b. 32 m. c. 6 m.

③ 

④ P = 20 X 4

= 80 cm.

30 m × 10 m

Lesson 2

Fill the Space

① ⓐ 40 cm². ⓑ 250 cm². ⓒ 400 cm².

② 8 X 6 = 48 m².

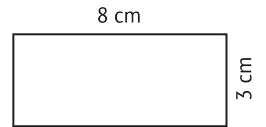
③ 9 X 9 = 81 cm².

④ Area = 12 X 2 = 24 m².

P = (12 + 2) X 2 = 28m.

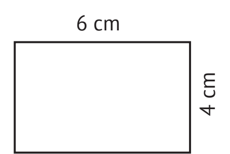
⑤ P = (8 + 3) X 2

= 22 cm.



P = (6 + 4) X 2

= 20 cm.

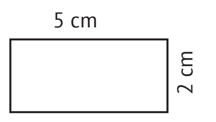


⑥ P = (5 + 2) X 2

= 14 cm.

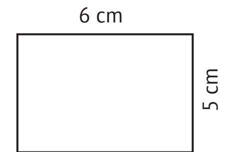
A = 5 X 2

= 10 cm².



⑦ P = (6 + 5) X 2

= 22 cm.



Lesson 3

Something Is Missing!

① ⓐ 34 cm , 70 cm². ⓑ 9 m , 54 m².

ⓒ 8 cm , 96 cm². ⓓ 9 cm , 26 cm.

ⓔ 6 dm , 28 dm.

② ⓐ 24 cm , 36 cm². ⓑ 7 cm , 49 cm².

ⓒ 8 mm , 32 mm.

③ P = 40 cm. A = 70 cm².

④ 25 cm × 4 cm; 20 cm × 5 cm

⑤ $\frac{1}{2}$ P = 60 m.

L = 60 – 30

= 30 m.

30 m × 30 m

Lesson 4

Odd Shapes

① P = 86 cm , A = 280 cm².

② P = 100 cm , A = 324 cm².

③ P = 52 cm , A = 114 cm².

Lesson 5

Growing Dimensions

① Hussam's Farm:

P = 30 m.

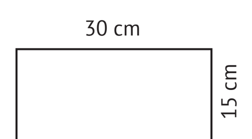
A = 50 m².

10 cm × 5 cm

Emad' Farm:

P = 90 m.

A = 450 m².



② Length of the house = 40 ÷ 2

= 20 m.

Width of the house = 40 ÷ 4

= 10 m.

Area of the house = 20 X 10

= 200 m².

Area of the land = 40 X 40

= 1,600 m².

Area of the garden = 1,600 – 200

= 1,400 m².

③ Width of the first mural = 24 ÷ 8 = 3 m.

Width of the second mural = 3 X 3 = 9 m.

P = 34 m. A = 72 m².

Unit 5

Lesson 1

Understanding Multiplicative Comparison

1. a) 5 times. b) triple.
   c) 5 times. d) triple.
   e) 7 times.
2. a) 6 X 4 = 24 b) 5 X 3 = 15
   c) 7 + 7 + 7 = 21 d) 6 + 6 + 6 + 6 + 6 = 30
3. a) 16,4 b) 14,7,7
   c) 8,4,2 d) 27,9,3
4. a) | 7 | 7 | 7 | 7 | b) | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
   c) | 8 | 8 | 8 | d) | 10 | 10 | 10 |

Lesson 2

Creating Multiplicative Comparison Equations

1. a) χ = 4 X 7 b) y = 4 X 3
   c) m = 2 X 7 d) 18 = 6 χ
   e) 24 = 4 y f) 48 = 8 χ
   g) 21 = 3 a h) 36 = 9 X m.
2. a) χ = 5 X 4 b) 12 = 3 χ
   c) 21 = 7 y d) χ = 2 X 4
   e) 18 = 6 m

Lesson 3

Solving Multiplicative Comparison Equations

1. a) X = 4 X 8 , χ = 32
   b) y = 5 X 6 , y = 30
   c) m = 2 X 9 , m = 18
   d) 18 = 6 a , a = 3
   e) 36 = 4 b , b = 9
   f) 42 = 7 n , n = 6
2. a) 15 = 3a , a = 5
   b) b = 5 X 3 , b = 15
   c) 20 = 5a , a = 4
   d) 24 = 3y , y = 8

Lesson 4

Commutative Property of Multiplication

1. a) 7 b) 6
   c) 6 d) 9
2. a) 8 b) 10
   c) 6 d) 8
3. 5 X 6 = 6 X 5
4. 5 X 8 = 8 X 5

Lesson 5

Patterns of Multiplying by 10s

1. a) 0 b) 0
   c) 1 d) 9
   e) 7 f) 1
2. a) 80 b) 900
   c) 6,000 d) 120
   e) 2,000 f) 30,000
3. a) 10 b) 1,000
   c) 100 d) 100
   e) 10 f) 10

Lesson 6

Exploring Pattens in Multiplication

1. a) 1,200 b) 1,500
   c) 40,000 d) 10,000
   e) 100,000 f) 400,000
2. a) 50 b) 60
   c) 500 d) 20
   e) 5000 f) 100
3. 1,000 X 2 = 2,000 mm.

Lesson 7

Exploring More Pattens in Multiplication

1 a (5 X 3) X 2 = 15 X 3 = 30

b (3 X 4) X 2 = 12 X 2 = 24

c 2 X (5 X 4) = 2 X 20 = 40

d 10 X (6 X 5) = 10 X 30 = 300

2 a 3,5 b 3,4

c 7,9 d 7,2

3 6 X 2 X 3 = 6 X (2 X 3)

= 6 X 6 = 36 eggs.

4 4 X 2 X 5 = 4 X (2 X 5)

= 4 X 10 = 40 bottles.

Lesson 8

Applying Patterns in Multiplication

1 a 10 b 100

c 8 d 5

e 60

2 a 240 b 240

c 4,000 d 6,300

e 40,000 f 42,000

Unit 6

Lesson 1

Identifying Factors of Whole Numbers

1 a 1, 2, 3, 4, 6, 12 b 1, 2, 4, 5, 8, 10, 20, 40

c 1, 2, 3, 4, 6, 9, 12, 18, 36

2 a 1, 5, 25 b 1, 2, 3, 4, 6, 8, 12, 16, 24, 48

c 1,19

3 a 10, 20, 30

b 1 5 2 2 , 5 , 10

3 2 4 5 5 2

Lesson 2

Prime and Composite Numbers

1 a 3,5 b 2,3,6,9

c 2,5 d 2,3,6,9

e 2,5 f 3,9

2 2, 3, 5, 7, 11, 13, 15, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97

3 a 1, 2, 7, 14 (Not a prime number)

b 1, 2, 23, 46 (Not a prime number)

c 1, 2, 11, 22 (Not a prime number)

d 1, 59 (prime number)

e 1, 2, 5, 10, 25, 50 (Not a prime number)

f 1,29 (prime number)

4 a 28 b 48

c 35

Lesson 3

Greatest Common Factor (G.C.F)

1 a 4 b 10

c 7 d 1

2 Largest number of groups = (G.C.F) = 9

Number of boys in each group

= 27 ÷ 9 = 3 boys.

Number of girls in each group

= 36 ÷ 9 = 4 girls.

3 Number of snacks

(G.C.F) = 12

Number of apples in each

package = 24 ÷ 12 = 2 apples.

Number of candy in each

package = 36 ÷ 12 = 3 candies.

Lesson 4

Identifying Multiples of Whole Numbers

1. 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40.
2. 0, 5, 10, 15, 20, 25, 30, 35, 40.
3. a) 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100.
   b) 10, 20, 30, 40, 50, 60, 70, 80, 90, 100.
4. a) 0, 16, 32, 40, 56, 64, 72, 80.
   b) 0, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60.
   c) 0, 7, 14, 21, 28.
   d) 27, 54, 99, 36, 45.

Lesson 5

Common Multiples

1. 0, 6, 12, 18
2. 0, 12, 24
3. a) 8, 16 b) 10, 20
   c) 24, 48 d) 42, 84
4. a) 40, 50, 60, 70 b) 48, 60, 72, 84
   c) 72, 96, 120

Lesson 6

Relationships Between Factors and Multiples

- a) 35 , 5,7 , 5,7 , 35 b) 48 = 6 X 8 , 8 , 8 , 48
  c) 24 d) 27
  e) 2,3 are factors of 6 or 6 is a multiple of 2,3.

Unit 7

Lesson 1

The Area Model Strategy

1. a) 64 b) 84
   c) 170
2. a) 120 b) 522
   c) 268 d) 686
3. 702
4. 138

Lesson 2

The Distributive Property

1. a) 1,248 b) 2,244
   c) 47,106 d) 10,748
2. a) 3,000 b) 1,944
   c) 19,425 d) 39,696
3. 980 cm.

Lesson 3

The Partial Products Algorithm

1. a) 2,048 b) 23,916
   c) 567 d) 5,616
   e) 500 f) 76,185

Lesson 4

The Standard Multiplication Algorithm

1. a) 1,200 , 1,422 , 1,422
   b) 63,000 , 66,825 , 66,825
2. a) 336 b) 1,944
   c) 29,232 d) 216
   e) 1,192 f) 39,330

Lesson 5

Connecting Strategies

1. a) 1,548 b) 270
   c) 4,298 d) 21,375
   e) 25,040
2. a) 3,192 b) 372
   c) 1,640 d) 372

Lesson 6

Two-Digit Multiplication

1. a) 960 b) 2,960
2. a) 2,800 b) 5,740
3. a) 7,650 b) 810
4. a) 450 b) 700
   c) 840 d) 2,400

Lesson 7

Area Models and 2-Digit Multiplication

1. a 2,205 b 3,827
   c 1,932 d 1,813
2. $215 \times 6 = 1,290$
3. $35 \times 38 = 1,330$

Lesson 8

Algorithms and 2-Digit Multiplication

- a 1,000 , 1,484 , 1,484
  b 2,400 , 3,216 , 3,216
  c 2,700 , 3,040 , 3,040

Lesson 9

Putting It All Together

1. $210 \times 2 = 420$ kg.
   $420 - 130 = 290$ kg.
2. $6 + 8 = 14$ km.
   $14 \times 6 = 84$ km.
3. $76 \times 3 = 228$ seats.
   $228 - 53 = 175$ seats.
   $76 + 228 + 175 = 479$ seats.
4. $65 \times 3 + 55 \times 2 = 305$ km.
   $500 - 305 = 195$ km.
5. $270 - 70 = 200$ km.
   $200 + 270 + 20 = 670$ km.

Lesson 10

Exploring Remainders

1. a 25 , 4 , 6 , 1 b 30 , 6 , 5 , 0
   c 28 , 5 , 5 , 3 d 16 , 3 , 5 , 1
   e 15 , 2 , 7 , 1
2. $60 \div 40 = 1$ R 20
   Number of buses = 2.
   Number of empty seats
   = 40 – 20 = 20.
2. $48 \div 5 = 9$ R 3
   Number of boxes = 10 boxes.

Lesson 11

Patterns and Place Value in Division

1. a $45 \div 9 = 5$, 500 b $15 \div 5 = 3$, 3,000
   c $8 \div 4 = 2$, 200 d $8 \div 4 = 2$, 2,000
2. a 300 b 500
   c 2,000 d 500
3. $9 \times 90 = 810$.
   All workers can't ride the same metro.
4. $360 \div 6 = 60$ patties.
5. $540 \div 9 = 60$ boxes.

Lesson 12

The Area Model and Division

1. a 14 b 22 R2.
   c 152 R1. b 400
2. $868 \div 8 = 108$ R4.
3. $492 \div 4 = 123$ cars.

Lesson 13

The Partial Quotients Algorithm

1. a 16 R3 b 28
   c 125 d 234 R1
   e 2,312 f 2,092 R2
2. $480 \div 3 = 160$ cups.
3. $1,026 \times 5 = 5,130$ cans.
   $5,130 \div 2 = 2,565$ cans.

Lesson 14

The Standard Division Algorithm

1. a 60 , 90 – 20 , 30
   b 600 , 900 – 200 , 300
   c 200 , 240 – 50 , 60
   d 4,000 , 6,000 – 2,000 , 3,000
   e 4,000 , 8,000 – 1,000 , 2,000

---

1. a 13 b 24 R1
   c 152 d 139 R3
   e 2,819 f 3,269
2. $784 \div 8 = 98$ passengers.

Lesson 15

Division and Multiplication

1. a) 3 – 100 – 200 – 169
   b) 2 – 60 – 70 – 66
   c) 3 – 600 – 700 – 608
   d) 3 – 600 – 700 – 603
2. a) 192 – 3 – 100 – 200
   b) 93 – 2 – 90 – 100
3. 219 ÷ 3 = 73 km.

Lesson 16

Solving Challenging Story Problems

1. 14 × 6 = 84 kg.
   84 + 14 = 98 kg.
   98 ÷ 7 = 14 bags.
   Number of bags = 14 bags.
2. 347 × 4 = 1,388 balls
   1,388 – 799 = 589 balls.
3. 21 ÷ 3 = 7 bottles.
4. 814 × 3 = 2,442 pages.
   2,442 + 814 = 3,256 pages.

Unit 8

Lesson 1

Problem-Solving Strategies

1. a) 468 b) 8,774
   c) 1,116 d) 113
2. a) 5,159 , 4,000
   b) 5,556 , 4950
   c) 762 , 1,000
   d) 210 R2 _ 200 , 300
3. a) 51,613 b) 20,715
   c) 1,536 d) 149

Lesson 2

Which Comes First?

1. a) 22 b) 5 c) 15
   d) 15 e) 1 f) 90
   g) 6 h) 12 i) 23
   j) 9 k) 10 l) 18
   m) 1 n) 14 o) 2
   p) 10 q) 6 r) 5
2. a) 34 , △ = 10 , ● = 6, ▭ = 4
   b) 58 , 𓂀 = 6 , △ = 3, ☥ = 11
   c) 98 , 💧 = 4 , ☀ = 9, ☁ = 10
   d) 38 , ⬟ = 7 , ○ = 3, ⏢ = 4

Lesson 3

Order of Operations

- a) 26 b) 21 c) 3
  d) 12 e) 11 f) 28
  g) 27 h) 1 i) 15

Lesson 4

The order of Operations and Story Problems

1. 246 – 24 = 222 bars.
   222 ÷ 6 = 37 bars.
2. 14 × 14 = 169 km.
   196 + 56 = 252 km.
3. 27 + 12 = 39 minutes.
   5 × 39 = 195 minutes.
4. 172 + 8 = 180 persons
   180 ÷ 9 = 20 microbuses.
5. 198 – 18 = 180 berries.
   180 ÷ 6 = 30 pancakes.
6. Answer by yourself.

Exercises Book

Exercises on Unit 1

Lessons 1&2

1

		Digit	Number	Numeral
a	8	✓	✓	✓
b	125		✓	✓
c	Eight			✓
d	Two hundred fifteen			✓
e	3	✓	✓	✓
f	45		✓	✓
g	5 + 200			✓

2 a 98,762 26,789 b 84,320 20,348
c 95,431 13,459 d 87,520 20,578

3

	Number	Place Value	Value
a	422,485	Tens	80
b	38,250	Thousands	8,000
c	83,115	Ten-thousands	80,000
d	700,810	Hundred	800
e	415,128	Ones	8
f	820,200	Hundred-thousands	800,000
g	210,682	80	80

4 a < b < c <
d > e = f >

5 a 8 Millions - 104 Thousands - 288
Eight million, one hundred four thousand, two hundred eighty eight.

b 43 Millions - 180 Thousands - 5
Forty three million, one hundred eighty thousand, five.

c 518 Millions - 129 Thousands - 208
Five hundred eighteen million, one hundred twenty nine thousand, two hundred eight.

d 5 Milliards (Billions) - 2 Millions - 403 Thousands - 750
Five milliard (billion), two million, four hundred three thousand, seven hundred fifty.

e 7 Milliards (Billions) - 365 Millions - 429 Thousands - 968 Seven billion, three hundred sixty five million, four hundred twenty nine thousand, nine hundred sixty eight.

6 a 25,250,200 b 120,025,012
c 300,005,003 d 600,200,003
e 5,006,004,004 f 9,025,125,225

7 a 456 ، 254 b 7 ، 24 ، 258
c 14 ، 105 d 9 ، 5 ، 2
e 23 ، 15 f 7 ، 0 ، 21

8 a Tens. b Ten-thousands.
c Millions. d Ones.
e Hundred-thousands.
f Hundreds. g Ten millions.
h Milliards (Billions).
i Hundred-millions. j Millions.

9 a 528,745,432 b 789,654,026
c 427,167,523 d 210,347,163
e 793,400,063 f 7,463,814,325
g 9,521,005,136 h 8,852,963,852
i 520,753,159 j 8,201,093

10 a 99,999 b 1,000
c 987,654 d 102,345
e 6,000 f 30,000
g Thousands. h Ones.
i 86,532 j 10,357
k 77,732 l 444,468
m 450,050,000 n 25,000,020
o 2 ، 40 ، 200 p 7 ، 458 ، 115 ، 251
q Seventy seven million, two thousands, two hundred five.
r 305,014,007 s Ten-millions.
t Ten-thousands. u 7 v 9

11 a Number. b Numeral (numerical form).
c 9 d 29
e 9,999 f 10,000
g 98,765 h 1,023
i 7 j 0

k Tens. l Hundred thousands.
m 98,761 n 10,458
o 999,971 p 22,268
q 12,015,020 r 5,003,045,009
s 3 Milliards (Billions) + 400 Millions + 3 Thousands + 25
t 4,605,090,015 u 6,000,500,030
v Ten-thousands. w 2

Worksheet 1

1 a 317 b 30,000,000
c 999,999 d 10
e numbers, digits.

2 a digit, number, numeral.
b Thousands. c 10,234
d 73,210 e 525

3 a > b <
c > d =

4 10,000 ، 99,999 ، 100,100 ، 990,000

Lessons 3&4

1 a Ones ، 8.
b Hundreds ، 100.
c Ten-thousands ، 80,000.
d Millions ، 0.
e Milliards (Billions) ، 7,000,000,000.
f Tens ، 60.
g Thousands ، 7,000.
h Hundred-thousands ، 500,000.
i Hundred-millions ، 400,000,000.
j Ten-millions ، 0.

2 a 8 b 600
c Thousands. d Hundred-thousands.
e 70,000,000 f 2,000,000,000
g Tens. h Ten-thousands.
i 1,000,000 j Hundred-millions.

3 a 300 b 500,000
c 200,000,000 d 600
e 70,000 f 20,000,000
g 90,000,000 h 100,000
i 50 j 10
k 80 l 9,000
m 1,000

4 a 5 b 60,000
c 6,000,000 d 100
e 300 f 9
g 10

5 a Hundred-thousands.
b Millions. c Ten-thousands.
d Ten-millions. e 10
f 10,000 g 1,000
h 1,000

6 a 87 X 10 = 870
b 603 X 100 = 60,300
c 350 X 10 = 3,500
d 7,020 X 100 = 702,000
e 6,200 X 1,000 = 6,200,000
f 4,000,700 X 100 = 400,070,000
g 953 X 10 = 9,530
h 9,702 X 100 = 970,200
i 953 X 10 = 9,530
j 900,005 X 10 = 9,000,050
k 800 X 100 = 80,000
l 15,000 X 1,000 = 15,000,000
m 100,000,000 X 10 = 1,000,000,000

7 a 9,999,999 _ 1,000,000
b 99,999,999 _ 10,000,000
c 999,999,999 _ 100,000,000
d 9,999,999,999 _ 1,000,000,000
e 9,876,543 _ 1,023,456
f 99,999,999 _ 11,111,111
g 987,654,321 _ 102,345,678
h 8,764,320 _ 2,034,678
i 986,542 _ 245,689
j 99,999,942 _ 22,222,249
k 99,999,998 _ 10,000,000
l 99,999,999 _ 10,000,001

8 a 800,000 b Tens.
c 60,000 d 300,000,000
e 6,000,000 f 8,000

g 400,000 h 40
i 60 j 200,000,000
k 5,000 l 1,000
m Hundred. n Thousands.
o 7,300 p 320,000
q 1,500,000,000 r 30,000,000
s 205,678 t 1,000

Worksheet 2

1 a 203,457 b 100
c 9,999,999 d 25,000,000
e Ten-thousands.

2 a 45,000 b 99,999,998
c 1,000 d 400,000
e 80

3 1 (b) 2 (d)
3 (a) 4 (e)
5 (c)

Lessons 5&6

1 a Seven Milliard (billion), two hundred million, one hundred fifty thousand, two hundred eight.
b Four hundred million, three hundred thousand two hundred.
c One million, five hundred thousand.
d Twenty million, fifty thousand, three.
e Four milliard (billion), six million, twenty thousand, three hundred twenty six.
f Two milliard (billion), thirty million, seven hundred thousand, six hundred.
g Two hundred million, seven hundred thousand.

2 a 500,020,050 b 4,007,005,009
c 18,090,000 d 1,000,520,040
e 8,050,060,307 f 9,000,800,300
g 9,030,060,020 h 3,000,300,000

3 a 400,000,000 + 100,000 + 20,000 + 600 + 3
b 5,000,000,000 + 200,000,000 + 90,000 + 50
c 20,000,000 + 700,000 + 50,000 + 600
d 200,000,000 + 50,000,000 + 500 + 20 + 4
e 6,000,000,000 + 800,000,000 + 10,000,000 + 5,000,000 + 400,000 + 30
f 9,000,000,000 + 30,000,000 + 5,000,000 + 900,000 + 5,000 + 300 + 6
g 100,000,000 + 90,000,000 + 600,000 + 20,000 + 4,000 + 10 + 7
h 60,000,000 + 3,000,000 + 500 + 90 + 7

4 a • Four milliard (billion), eighty million, one hundred seven thousand, two hundred fifty.
• 4,000,000,000 + 80,000,000 + 100,000 + 7,000 + 200 + 50
b • Four milliard (billion), one hundred twenty five thousand, six hundred ninety five.
• 4,000,000,000 + 100,000 + 20,000 + 5,000 + 600 + 90 + 5
c • 350,905,255
• 300,000,000 + 50,000,000 + 900,000 + 5,000 + 200 + 50 + 5
d • 3,600,070,015
• 3,000,000,000 + 600,000,000 + 70,000 + 10 + 5
e • 700,054,325
• Seven hundred million, fifty four thousand, three hundred twenty five.
f • 7,204,030,293
• Seven milliard (billion), two hundred million, four, thirty thousand, two hundred ninety three.

5 a (3 x 100,000,000) + (2 x 100,000) + (5 x 10,000) + (1 x 100) + (2 x 1).
b (7 x 1,000,000,000) + (5 x 10,000,000) + (8 x 100) + (6 x 10) + (5 X 1)
c (3 x 1,000,000,000) + (6 x 1,000,000) + (8 x 10,000) + (5 x 100)
d 2,090,807,376 e 3,600,053,080
f 256,009,483

6 **a** • 8,007,206,059

• Eight milliard (billion), seven million, two hundred six thousand, fifty nine.

• 8,000,000,000 + 7,000,000 + 200,000 + 6,000 + 50 + 9

• (8 x 1,000,000,000) + (7 x 1,000,000) + (2 x 100,000) + (6 x 1,000) + (5 x 10) + (9 x 1).

b • 920,702,800

• 900,000,000 + 20,000,000 + 700,000 + 2,000 + 800

• (9 x 100,000,000) + (2 x 10,000,000) + (7 x 100,000) + (2 x 1,000) + (8 x 100).

c • 39,800,202

• Thirty nine million, eight hundred thousand, two hundred two.

d • 2,890,105

• Two million, eight hundred ninety thousand, one hundred five.

• (2 x 1,000,000) + (8 x 100,000) + (9 x 10,000) + (1 x 100) + (5 x 1).

7 **a** Thirty five million, two hundred thousand, eight hundred ten.

b Eight hundred seven million, fifty thousand, three hundred two.

c 650,013,526 **d** 7,400,002,030

e 100,000,000 + 50,000,000 + 200 + 30

f 8,020,802,080 **g** 6,060,060,660

h 3,050,012,245 **i** 5,500,050,500

j 305,700,016 **k** 5,006,009,007

l 330 million, 330 thousand, 330

Worksheet 3

1 **a** Three hundred fifty million, three hundred fifty.

b 4,053,004,503 **c** 435,400,305

d 260,026,026 **e** 80,000,000

2 **a** Five milliard (billion), five million, fifty thousand, five hundred.

b (4 x 1,000,000,000) + (3 x 10,000,000) + (9 x 100,000) + (5 x 1,000) + (7 x 10).

c Ten thousands. **d** (5 x 1,000,000).

e (7 x 100,000,000) + (7 x 10,000).

3 **1** (b) **2** (d)

3 (a) **4** (e)

5 (c)

4 **1** 3,090,200,240

2 Three milliard (billion), ninety million, two hundred thousand, two hundred forty.

3 3,000,000,000 + 90,000,000 + 200,000 + 200 + 40

4 (3 x 1000,000,000) + (9 x 10,000,000) + (2 x 100,000) + (2 x 100) + (4 x 10).

Lessons 7-9

1 **a** > **b** < **c** >

d < **e** > **f** >

g = **h** > **i** =

j < **k** < **l** <

m > **n** < **o** =

p <

2 **a** 792,689 **b** 280

c 1,000,020,000 **d** 75,000

3 **a** 200,200 < 256,256 < 300,000

b 600,000 < 500,000 < 400,000

c 405,405 **d** 4,000,500

e 3,000,754 < 4,000,754 < 5,000,754

f 150,452 > 150,352 > 150,252

4 **a** 5,000 ، 45,000 ، 550,000 ، 25,030,000

b 154,200 ، 205,687 ، 360,548 ، 545,352

c 557,589 ، 557,859 ، 557,895 ، 557,985

d 500,000 ، 500,005 ، 500,500 ، 505,550

5 **a** 999,999 ، 909,909 ، 900,990 ، 900,000

b 55,512 ، 55,251 ، 55,152 ، 55,125

c 300,020,010 ، 300,002,100 ، 200,300,100 ، 200,030,001

6

The Order	Standard Form
4	530,000,450

3	503,400,005
5	530,405,000
1	5,030,450
2	50,030,045

7

The Order	Standard Form
5	99,990,090
2	9,000,000,090
3	999,000,000
1	9,000,090,000
4	900,900,900

8

The Order	Standard Form
3	5,000,300,009
4	5,000,300,090
5	5,000,300,900
2	5,000,003,900
1	5,000,003,009

9

The Order	Standard Form
4	1,000,503,205
5	1,000,030,250
2	1,050,325,000
1	1,500,030,250
3	1,032,005,000

10 a < b < c >
d 10,000,000 e 35,202,000
f 99,999,999 g 100 million.

Worksheet 4

1 a 2,000,003,003 b Ten-thousands.
c 200,045 d 1,000,000
e 9,876,534.

2 a 900,000,000 + 200,000 + 6,000 + 8.
b 4 Thousands , 5 Tens , 405,000
c Hundred-thousand.
d Thousands.
e Eight million, eight thousand.

3 a < b < c >
d = e >

4 10,002,005 ، 10,020,500 ، 10,025,000 ، 10,200,050

Lessons 10&11

1 a 400,000,000 b 7,000,000,000
c 20,000,000 d 8,000,000
e 400,000 f 4,000,000,000
g 400,000,000

2 a 9,000,654 ، 9,000,000
b 80,703,008 ، 80,000,000
c 830,065,400 ، 800,000,000
d 9,080,050,563 ، 9,000,000,000
e 560,040,008 ، 500,000,000
f 86,028,000 ، 80,000,000
g 452,025,315 ، 400,000,000
h 6,650,019,400 ، 6,000,000,000

3 a **Midpoint:** 345 ، 343 ≈ 340
b **Midpoint:** 475 ، 472 ≈ 470
c **Midpoint:** 915 ، 912 ≈ 910
d **Midpoint:** 4,295 ، 4,298 ≈ 4,300

4 a **Midpoint:** 850 ، 829 ≈ 800
b **Midpoint:** 250 ، 293 ≈ 300
c **Midpoint:** 1,250 ، 1,280 ≈ 1,300
d **Midpoint:** 6,950 ، 6,988 ≈ 7,000

5 a **Midpoint:** 5,500 ، 5,425 ≈ 5,000
b **Midpoint:** 6,500 ، 6,774 ≈ 7,000
c **Midpoint:** 18,500 ، 18,524 ≈ 19,000
d **Midpoint:** 29,500 ، 29,954 ≈ 30,000

6 a **Midpoint:** 150,000
178,652 ≈ 200,000
b **Midpoint:** 450,000
462,685 ≈ 500,000
c **Midpoint:** 950,000
972,821 ≈ 1,000,000

7 a **Midpoint:** 45,000,000
45,284,564 ≈ 50,000,000
b **Midpoint:** 5,000,000
2,326,120 ≈ 0

8 a **Midpoint:** 5,500,000,000
5,205,452,152 ≈ 5,000,000,0000
b **Midpoint:** 4,500,000,000
4,815,600,002 ≈ 5,000,000,000

9 a 50 b 80
c 850 d 970
e 7,550 f 2,600
g 76,000 h 100,000

10 a 8,000 b 6,000
c 5,000 d 10,000
e 29,000 f 100,000
g 100,000 h 456,000

11 a 72 ، 40 + 20 = 60 ، 50 + 30 = 80 (✓)
b 69 ، 20 + 40 = 60 ، 20 + 50 = 70 (✓)
c 47 ، 10 + 20 = 30 ، 20 + 30 = 50 (✓)
d 298 ، 100 + 100 = 200 ، 200 + 100 = 300 (✓)
e 600 ، 300 + 200 = 500 ، 300 + 300 = 600 (✓)
f 480 ، 100 + 300 = 400 ، 100 + 400 = 500 (✓)
g 74 ، 80 – 10 = 70 (✓) ، 90 – 20 = 70 (✓)
h 42 ، 800 – 700 = 100 ، 800 – 800 = 0 (✓)
i 97 ، 400 – 300 = 100 (✓) ، 500 – 400 = 100 (✓)
j 742 ، 900 – 200 = 700 (✓) ، 1000 – 200 = 800

12 a 5,000 b 300,000
c 300,000 d 1,000,000
e 90,000 f 10
g 1,000 h 1,000,000
i 1,000 j 1,000,000
k 999 ≈ 1,000 l 9,266 ≈ 9,000
m 651 ≈ 700 n 14,875 ≈ 15,000

13 a 1,000 b 900,000
c 100,000 d 6,000,000
e 100 f 100
g 10,000 h 454
i 1,150

Worksheet 5

1 a 8,000 b 1,000,000
c 100 d 10
e 2,100,000

2 a 800,000,000 + 90,000,000 + 6,000,000 + 3,000 + 10 + 5
b billions. c 10,600 ، 11,000
d 10,000 e 549

3 Three hundred thirty thousand - thirty million - 30,030,000 - 3,000,030,000

4

Number	To the Nearest 10	To the Nearest 100	To the Nearest 1,000	To the Nearest 10,000
a 56,452	56,450	56,500	56,000	60,000
b 805,605	805,610	805,600	806,000	810,000
c 9,499	9,500	9,500	9,000	10,000
d 9,809	9,810	9,800	10,000	10,000
e 10,200	10,200	10,200	10,000	10,000

Exercises on Unit 2

Lesson 1

1 a 6 ، Commutative.
b 9 ، Associative.
c 8 ، Neutral Element.
d 27 ، Commutative.
e 9 ، Neutral Element.
f 41 , 94 ، Associative.
g 39 ، Commutative.
h 0 ، Neutral Element.
i 300 , 125 ، Associative.

2 a 15 + 27 + 85 = 15 + 85 + 27 "Commutative"
= (15 + 85) + 27 "Associative"
= 100 + 27 = 127

b 755 + 615 + 245 = 755 + 245 + 615 "Commutative"
= (755 + 245) + 615 "Associative"
= 1,000 + 615 = 1,615

c 42 + 908 + 92 = 42 + (908 + 92) "Associative"
= 42 + 1,000 = 1,042

d 244 + 0 + 256 = 0 + 244 + 256 "Commutative"
= 0 + (244 + 256) "Associative"
= 0 + 500 "Neutral Element"
= 500

e 244 + 0 = 0 + 244 "Commutative & Neutral Element"
= 244

3 a Commutative. b Associative.
c Commutative. d Associative.
e Commutative. f Commutative.
g Associative. h Neutral Element.
i Associative. j Associative.

Worksheet 1

1 a 45 ، Commutative.
b 85 ، Associative.
c 8,000,000. d 30,000
e 0 ، Neutral element.

2 a Commutative. b 111,111
c 10,000 d Associative.
e 550,000,005

3 a > b >
c < d >

4 3,458,582 ، 3,548,258 ، 3,584,852 ، 3,854,852

5 **Midpoint:** 4,500
4,458 ≈ 4,000

5,000
4,458
4,500
4,000

Lessons 2&3

1 a 40 + 70 = 110 b 90 – 40 = 50
c 100 + 500 = 600 d 900 – 200 = 700
e 900 – 200 = 700
f 4,000 + 6,000 = 10,000
g 9,000 – 3,000 = 6,000
h 20,000 + 30,000 = 50,000
i 200,000 – 100,000 = 100,000

2 a 120 b 80 + 40 = 120
c 100 – 20 = 80 d 200 + 300 = 500
e 400 – 300 = 100 f 2,000 + 4,000 = 6,000
g 78,000 – 69,000 = 9,000

3

a 22 + 10 = 32	b 223 + 10 = 233	c 25 + 30 = 55
d 123 + 100 = 233	e 300 + 573 = 873	f 1,000 + 353 = 873
g 47 – 10 = 37	h 87 – 50 = 37	i 486 – 100 = 386
j 226 – 100 = 126	k 787 – 700 = 87	l 8,458 – 1,000 = 7,458

4

a 56 + 20 + 4 = 76 + 4 = 80	b 45 + 30 + 7 = 75 + 7 = 82	c 256 – 40 – 5 = 216 – 5 = 211
d 564 – 40 – 5 = 524 – 5 = 519	e 542 + 200 + 30 + 1 = 742 + 30 + 1 = 772 + 1 = 773	f 986 + 200 + 40 + 1 = 1,186 + 40 + 1 = 1,226 + 1 = 1,227

g 3,175 – 200 – 50 – 3 = 2,975 – 50 – 3 = 2,925 – 3 = 2,922	h 8,456 – 900 – 90 – 8 = 7,556 – 90 – 8 = 7,466 – 8 = 7,458
i 6,725 + 1,000 + 200 + 30 + 4 = 7,725 + 200 + 30 + 4 = 7,925 + 30 + 4 = 7,955 + 4 = 7,959	j 3,957 – 2,000 – 200 – 10 – 4 = 1,957 – 200 – 10 – 4 = 1,757 – 10 – 4 = 1,747 – 4 = 1,743

5 a 5 b 7
c 3 d 20
e 3 f 6

6 a 90,695 b 651,556
c 1,000,000 d 423,309
e 1,821,202 f 1,200,000
g 573,224 h 560,513
i 9,642,915 j 1,000,000,000

7

Problem	To the Nearest 10	To the Nearest 100	To the Nearest 1,000
a 24,456 + 13,428 = 37,884	24,456 + 13,428 = (✓) 37,884	24,500 + 13,400 = 37,900	24,000 + 13,000 = 37,000
b 256,634 + 885,365 = 1,141,999	256,630 + 885,370 = (✓) 1,142,000	256,600 + 885,400 = (✓) 1,142,000	257,000 + 885,000 = (✓) 1,142,000
c 2,256 + 3,815 = 6,071	2,260 + 3,820 = (✓) 6,080	2,300 + 3,800 = 6,100	2,000 + 4,000 = 6,000
d 125,278 + 289,132 = 414,410	125,280 + 289,130 = (✓) 414,410	125,300 + 289,100 = (✓) 414,400	125,000 + 289,000 = (✓) 414,000

8 a 9,400 + 7,200 = 16,600 / 9,372 + 7,245 = 16,617
b 458 + 367 = 825 / 370 + 460 = 830
c 855 + 855 = 1,710 / 900 + 900 = 1,800
d 511 + 619 = 1,130 / 500 + 600 = 1,100
e 686 + 621 = 1,307 / 700 + 600 = 1,300

Worksheet 2

1 a 100 ، 124 b 100,000 ، 100 ، 10
c 90,000,000 d 9 ، Associative.
e 75,000.

2 a 100 b 800,008,000
c 98 d 48
e Commutative.

3 9,900,990 ، 1,000,000 ، 990,909 ، 100,000

4 800 + 400 = 1,200
773 + 375 = 1,148

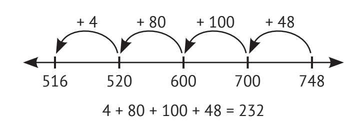
Lessons 4&5

1 a 330

- 4, - 20, - 300
330, 334, 354, 654
654 - 324 = 330

b 373 c 655 d 1,903
e 4,440 f 4,237
g 6,354 h 41,221

2 a 232



b 192 c 176 d 2,090
e 4,104 f 1,093
g 4,137 h 40,331

3 a 4,531

Thousands	Ones		
Thousands	Hundreds	Tens	Ones
4	5	3	1

b 1,501 c 10737
d 22,392 e 231,123

4 a 36,160 b 542,681
c 177,761 d 185,952
e 218,103 f 99,999
g 506,000 h 317,142
i 1,019,522 j 36,323,726

5 a 108 ، 200 b 970 ، 1,000
c 2,855 ، 10,000

6 a 621 – 476 = 145 trees.
b 1,270 – 630 = 640 pounds.
c 1,028 – 542 = 486 boys.
d 3,256 – 2,804 = 452 pounds.
e 1,200 – 235 = 965 cm.
f 4,015 – 725 = 3,290 books.
g 5,100 – 3,250 = 1,850 pounds.

Worksheet 3

1 a 9,000,500,400 b Millions.
c 243 d 10,000

2 a 100,000 b 4,060,109
c 999,999 d 5,000
e Additive Neutral Element.

3 a 90,911 b 50,060
c 11,671 d 710,436

4 754 – 245 = 509 5 773 – 375 = 398 ships.

Lessons 6&7

1 a x = 1,200 – 700
x = 500

1,200	
700	X

b 8,000 c 9,500 d 68,125
e 5,950 f 1,148 g 289,000

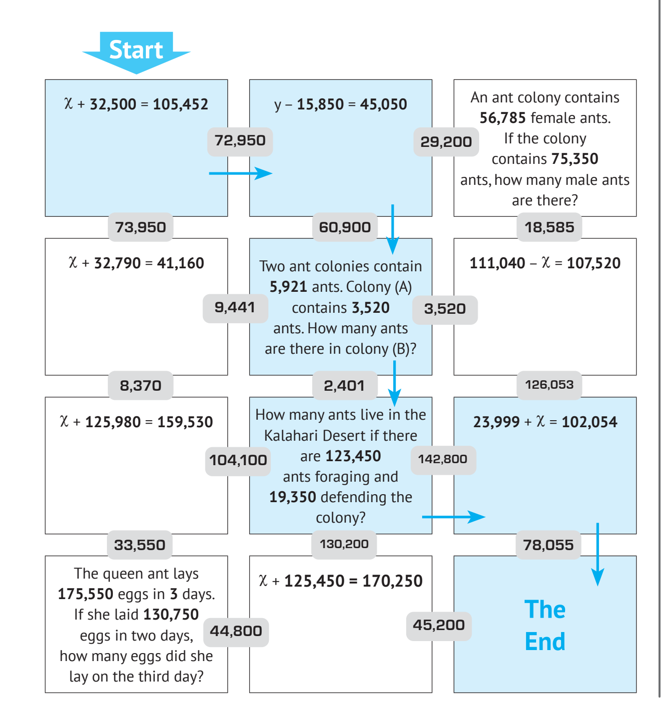
2 a 58,620 + 58,620 = 117,240 meters.
193,120 – 117,240 = 75,880 meters.
b 167,029 + 67,370 = 234,399.
404,901 – 234,399 = 170,502.
c 1,525 + 19,750 + 3,705 = 24,980 ants.
30,520 – 24,980 = 5,540 ants.
d 1,232 – 876 = 356 doughnuts.

3 a x = 207 – 125
x = 82

207	
X	125

b 511 c 5,161 d 1,131
e 590 f 1,173 g 253
h 388 i 205 j 420

The Maze



Exercises on Unit 3

Lesson 1

1 a Millimeter. b Centimeter.
c Meter. d Kilometer.
e Millimeter. f Centimeter.
g Meter. h Meter.
i Centimeter. j Meter.
k Meter.

2 Answer by yourself.

3 a 525 b 2,038
c 3,005 d 8,550
e 10,035 f 20 ، 007
g 5 ، 74 h 70 ، 50
i 602 ، 50 j 1 ، 258
k 20 ، 240 l 65 ، 5
m 5 ، 40 n 82 ، 5
o 2 ، 2

4 a 745 b 902
c 2,008 d 5,090
e 8,750 f 80,060
g 40,007 h 55
i 67 j 84
k 8 ، 60 l 5 ، 4
m 50 ، 65 n 210 ، 50
o 2 ، 745 p 71 ، 25
q 12 ، 500 r 72 ، 5
s 10 ، 8 t 15 ، 5

5 a Centimeter. b 7,000
c 8 d 50,020
e 5,050 f 3,000
g < h <
i =

6 8 m = 8 x 100 = 800 cm.

7 10 km = 10,000 m = 1,000,000 cm.

8 250 dm = 2,500 cm = 25,000 mm.

9 250 + 250 + 250 + 250 = 1,000 m = 1 km.

Number of hours = 4 hours.

Worksheet 1

1
- a Meter.
- b Mass.
- c 250,050,005
- d 2 km.
- e 43

2
- a 40,000 ، 25 ، 40,025
- b 95 ، 70
- c Capacity.
- d Billions.
- e 54,600

3
- a <
- b <
- c >
- d >
- e =

4 1,500 cm ، 25 m ، 2,000 dm ، 2 km.

5 2 km = 2,000 m = 20,000 dm = 200,000 cm.

Lesson 2

1
- a Gram.
- b Gram.
- c Kilogram.
- d Kilogram.
- e Gram.
- f Kilogram.

2 Answer by yourself.

3
- a 5,200
- b 8,007
- c 15,015
- d 20,200
- e 3 ، 250
- f 60 ، 24
- g 200 ، 60
- h 10 ، 6

4
- a 4,000
- b 20,000
- c 300,000
- d 680,000
- e 3
- f 90
- g 600
- h 905
- i 3 ، 250
- j 24 ، 120
- k 30 ، 20
- l 300 ، 8
- m 3,245
- n 15,020
- o 12,150
- p 20,100

5
- a Gram
- b a ring
- c 40,000
- d 200,000
- e 60
- f 3
- g 20,050
- h 10,300

6 125,350 grams.

7 3 kilograms ، 493 grams.

8 5,200 + 8,000 = 13,200 grams.

Worksheet 2

1
- a Kilogram.
- b a desk.
- c 50
- d 30,125
- e 50,000

2
- a 9,999,999
- b 5,004
- c 56 ، 240
- d (3 x 100,000) + (1 x 10,000) + (2 x 100) + (5 x 1)
- e 1,000,000

3
- a >
- b <
- c <
- d =
- e =

4 4,300 + 3,000 + 900 = 8,200 grams.

Lesson 3

1
- a Milliliter.
- b Liter.
- c Milliliter.
- d Liter.
- e Liter.
- f Milliliter.

2 Answer by yourself.

3
- a 3,450
- b 12,050
- c 20,008
- d 12,500
- e 8 ، 56
- f 31 ، 500
- g 40 ، 3
- h 6 ، 70

4
- a 3,000
- b 50,000
- c 16,000
- d 20,000
- e 7
- f 80
- g 15
- h 200
- i 8 ، 20
- j 20 ، 50
- k 100 ، 9
- l 10 ، 16
- m 3,500
- n 20,040
- o 12,009

5
- a Milliliter.
- b capacity.
- c 20,000
- d 100,000
- e 5
- f 300
- g 45,045
- h 60,006

6
- 50,000
- 35,130
- 50,000 – 35,130 = 14,870 milliliters.

7 • 4,250 • 1,050
• 4,250 + 1,050 = 5,300 milliliters.

8 500,000 – (250,600 + 125,500)
= 500,000 – 376,100 = 123,900 milliliters.

Worksheet 3

1 a 10 b 50,000
c 14,014 d >
e 75,000

2 a 88,008,008 b 20 ، 250 c 205 ، 0
d 60 e 50,020

3 a 87,703 b 28,510
c 100,000 d 56,000

4 5,500,000 ، 5,050,000 ، 500,500 ، 500,005

5 2,000 – 660 = 1,340 milliliters.

Lesson 4

1 ، 2 & 3 Answer by yourself.

4 a 800 b 20
c 5,000 d 200
e 3 f 50
g 500 h 200,000
i 50 j 5,000
k 2,000 l 40
m 9 n 12,000
o 250 p 40
q 50 r 50
s 2

5 a 120 ، 1,200 b 100 ، 10
c 30 ، 300 d 50 ، 5
e 350 ، 3,500 f 200 ، 20
g 70 ، 700 h 60 ، 6
i 300 ، 3,000 j 900 ، 90
k 110 ، 1,100 l 700 ، 70

6 800 cm. 7 60 gm.

8 1,000 ml. 9 15,000 mm.

10 4,000 ml.

Worksheet 4

1 a 150
b Twenty million, six hundred fifty thousand, sixty five.
c 9 d 1,000
e 8,999,9999

2 a 2,000 b 505,005,005
c 4,200 d 765,430
e 500

3 a < b =
c > d =

4 a 56,600 b 20,547

5 65,250 gm.

Lesson 5 & 6

1 ، 2 ، 3 & 4 Answer by yourself.

5 a 10 b 33
c 20 d 32
e 68 f 82
g 220 h 130
i 85 j 230
k 615 l 123

6 a 3 ، 4 b 5 ، 1
c 6 ، 6 d 1 ، 5
e 2 ، 12 f 10 ، 10
g 1 ، 35 h 3 ، 20
i 9 ، 20 j 1 ، 5
k 3 ، 15 l 6 ، 20

7 a 1 : 21 b 8 : 04
c 9 : 29 d 9 : 20
e 8 : 17 f 9 : 14
g 1 : 11 h 3 : 28
i 00 : 50 j 2 : 45
k 2 : 25 l 10 : 25
m 9 : 51 n 10 : 00
o 7 : 10 p 5 : 17
q 2 : 10 r 00 : 30

8 **a** 240 hours. **b** 144 + 13 = 157 hours.
c 3 weeks. **d** 19 + 19 + 19 = 57 hours.
e 4 hours.

9 11 hours = 660 minutes.

10 120 + 15 = 135 minutes.

11 8 : 35 + 1 : 30 = 10 : 05.

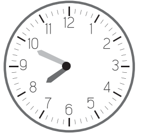
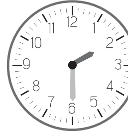
12 7 : 42 – 6 : 30 = 1 : 12
One hour and 12 minutes.

Worksheet 5

1 **a** Associative **b** 3,000,099
c 50 **d** 1,023,465
e 200

2 **a** 6 : 00 **b** 610
c 100 **d** 450,462
e 5 ، 4

3 **a**

b

c


4 5 : 35 + 1 : 15 = 6 : 50

Lessons 7 - 9

1

a	**b**
3 x 7 = 21 7 x 3 = 21 21 ÷ 3 = 7 21 ÷ 7 = 7	4 x 8 = 32 8 x 4 = 32 32 ÷ 4 = 8 32 ÷ 8 = 4
c 7 x 6 = 42 6 x 7 = 42 42 ÷ 6 = 7 42 ÷ 7 = 6	**d** 2 x 8 = 16 8 x 2 = 16 16 ÷ 2 = 8 16 ÷ 8 = 2

2 **a**

The Size of Ants

Size in mm.	1	2	3	4	5	6	7	8	9	10
	x	x x	x x x x	x x	x	x	x	x	x x	x x x

Size in mm.
X = 1 type of ants.

b Ghost Ants. **c** 3
d 9 **e** 3

3 Answer by yourself.

4 **a** The number of minutes.
b 15 min. **c** 60 min.
d 150 min. **e** 90 min.

5 950 – (25 + 37) = 888 gm.

6 106 – 10 = 96 cm.

7 3,000 – 2,000 = 1,000 m = 1 km.

8 7,450 + 17,120 = 24,570 gm.

9 8,000 – 2,829 = 5,171 ml.

10 540 – 250 = 290 min.

11 300 + 500 = 800 mm = 80 cm.

12 20,000 – 17,000 = 3,000 gm.

13 4,000 – (1,200 + 950) = 1,8,50 ml.

14 5 : 10 - 3 : 45 = 1 : 25 = 85 min.
Yes, he broke the rule.
85 – 80 = 5 min.

15 12 + 3 = 4 m = 400 cm.

16 30 x 5 = 150 min.

17 5,000 x 9 = 45,000 m = 45 km.

18 10 x 50 = 500 gm.

19 6 x 5,000 = 30,000 m = 30 km.

20 8 x 30 = 240 min = 4 hours.

21 10,000 + 2,000 = 5 days.

22 5 x 20 = 100 km = 100,000 m.

Worksheet 6

1 **a** 5,009,999 **b** 1
c 360 **d** Watches.
e 3,030,300 **f** Commutative.

2 **a** 75 **b** 3 ، 15
c 600,706,706
d 1 : 22
e Hundred-thousand.

3 **1** (c) **2** (a)
3 (d) **4** (b)

4 5,005,050 ، 5,005,500 ، 5,050,050 ، 5,500,005

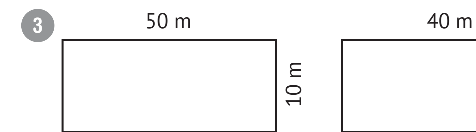
Exercises on Unit 4

Lesson 1

1. a) 22 cm. b) 28 cm.
   c) 38 mm. d) 50 m.
   e) 80 m. f) 20 cm.
   g) 70 m. h) 120 mm.

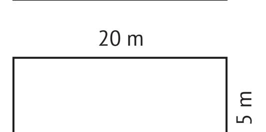
2. a) 200 cm. b) 8 m.
   c) 56 m. d) 120 cm.
   e) 346 m.

3.

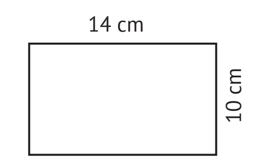


4.

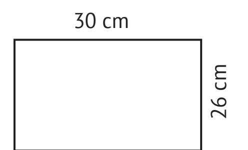
15 m
10 m



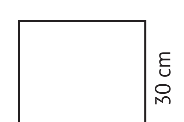
5. P = 12 x 4
   = 48 cm.



6. P = 28 x 4
   = 112 cm.



7. P = 30 x 4
   = 120 cm.



8. a) L + W + L + W b) L ، W
   c) L ، W d) L ، 4
   e) 16 cm. f) 50 m.
   g) 24 cm. h) 80 mm.

9. a) P = (L + W) x 2
   b) P = (L x 2) + (W x 2)
   c) P = L + W + L + W
   d) 24 e) 28 f) 24
   g) 40

Worksheet 1

1. a) 25 b) 7
   c) 28 d) 300,030,000
   e) 200

2. a) 80 mm. b) 40,020,030
   c) Hundred-thousand.
   d) 45 ، 19 ، Associative.
   e) 450

3. a) 701,309 b) 350,062
   c) 502,000,473 d) 799,999,999

4. 540,000 ، 500,400 ، 450,000 ، 405,000 ، 400,500

5. P = (2 + 5) x 2 = 7 x 2 = 14 m.

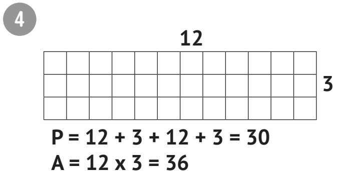
Lesson 2

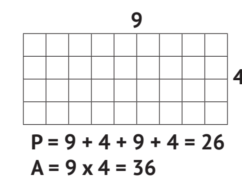
1. a) $24\ cm^2$. b) $40\ cm^2$.
   c) $54\ mm^2$. d) $120\ m^2$.
   e) $400\ m^2$. f) $25\ cm^2$.
   g) $9\ m^2$. h) $81\ cm^2$.

2. A = 8 x 20 = $160\ cm^2$.

3. P = 6 + 6 + 2 + 6 + 6 + 2 = 28 m.
   A = 12 x 2 = $24\ m^2$.

4.





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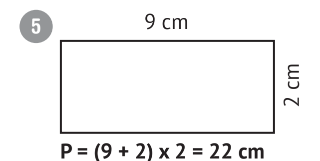
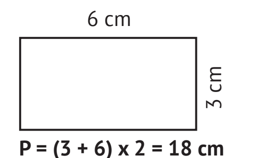
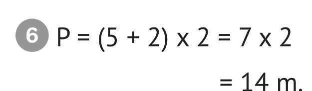
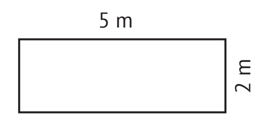




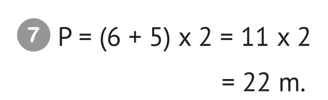
6.



P = (5 + 2) x 2 = 7 x 2
= 14 m.
A = 5 x 2 = $10\ m^2$.



7.

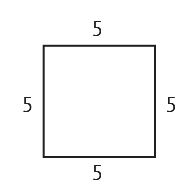


P = (6 + 5) x 2 = 11 x 2
= 22 m.

6 m
5 m

8 P = 5 x 4

= 20 cm.



9 a L x W b L x L

c 24 ، 27 d 200

e A = 3 x 3 = 9 cm^2.

A = 3 x 7 = 21 cm^2.

A = 9 + 21 = 30 cm^2.

10 a A = L x W b A = L x L

c 49 d 32

e 24

Worksheet 2

1 a 64 b 70,000

c 400,040,004 d 18 cm.

e 45 + 30 + 4

2 a 50 cm^2. b 50,000

c 45,099,999 d 5

e 100

3 a > b <

c = d >

4 a A = 16 + 32 = 48 cm^2.

b P = (4 + 12) x 2 = 16 x 2 = 32 cm.

5 A = 6 x 8 = 48 m^2.

Lesson 3

1 a 26 cm ، 40 cm^2. b 6 m ، 24 m^2.

c 6 m ، 42 cm^2.

d 10 mm ، 150 mm^2.

e 10 mm ، 200 mm^2.

f 7 cm ، 26 cm^2. g 9 cm ، 32 cm.

h 4 dm ، 20 dm. i 5 dm ، 26 dm.

2 a 16 cm ، 16 cm^2. b 28 cm ، 49 cm^2.

c 8 cm ، 64 cm^2. d 5 m ، 25 m^2.

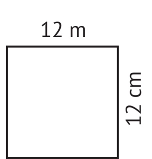
e 6 mm ، 24 mm. f 9 mm ، 36 cm.

3 8 + 8 + 4 + 5 + 4 + 3 = 32 meters.

A = 12 + 32 = 44 m^2.

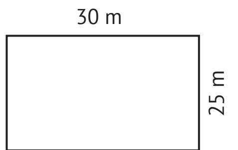
4 12 x 12 = 144

So, the side length = 12 cm.



5 110 ÷ 2 = 55 m

55 – 25 = 30 m.



6 W = 900 ÷ 45 = 20 cm.

7 100 ÷ 2 = 50 cm. W = 50 - 30 = 20 cm.

8 a 10 b 6

c 5 d 6

e 9 f 20

9 a 8 b 9

c 48 d 24

e 4 f 7

g 100 h 24

Worksheet 3

1 a 9 b 98,765,432

c Additive Neutral Element.

d 10,000 e meters.

2 a 28 b 50 ، 65

c 100,000 ، 100 ، 10 d 218

e 541

3 a P = 20 x 4 = 80 cm ، A = 20 x 20 = 400 cm^2.

b P = (8 + 4) x 2 = 12 x 2 = 24 cm ،

A = 8 x 4 = 32 cm^2.

4 A = 8 x 4 = 32 km^2.

Lesson 4

1 a P = 38 cm , A = 48 cm^2.

b P = 58 cm , A = 150 cm^2.

c P = 64 cm , A = 176 cm^2.

d P = 76 cm , A = 256 cm^2.

e P = 20 cm , A = 16 cm^2.

2 P = 40 cm ، A = 60 cm^2.

3 P = 30 cm ، A = 32 cm^2.

4 **Table (1):** A = 2 x 1 = 2 m^2.

Table (2): A = 4 x 1 = 4 m^2.

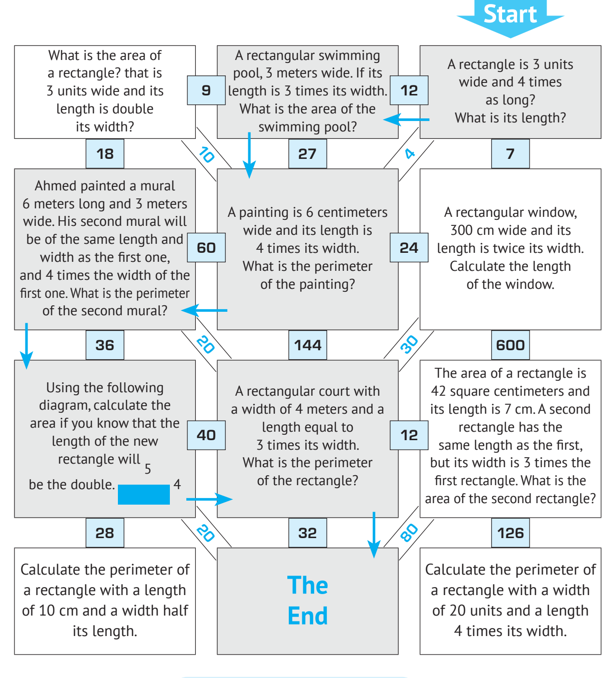
Table (3): A = 2 x 1 = 2 m^2.

A = 2 + 4 + 2 = 8 m^2.

Lesson 5

1. A = 20 x 5 = 100 cm^2 ،
   P = (20 x 2) + (5 x 2) = 50 cm.
2. A = 12 x 4 = 48 cm^2 ،
   P = (12 + 4) x 2 = 32 cm.
3. W = 20 ÷ 5 = 4 m.
   P = (12 x 2) + (15 x 2) = 24 + 30 = 54 m.
4. P = (5 + 3) x 2 = 16 m.
   P = (10 x 2) + (6 x 2) = 32 m.
   A = 10 x 6 = 60 m^2.
5. A = 18 x 6 = 108 m^2 ،
   A = 3 x 2 = 6 m^2.
   108 – 6 = 102 m^2.

The Maze



Worksheet 4

1. a) 999,971 b) 48
   c) 5,050 d) mass.
   e) 2
2. a) 26
   b) Thirty six million, two hundred fifty.
   c) 5 d) 100 e) 100
3. P = 72 cm ، A = 210 cm^2.
4. W = 42 ÷ 7 = 6 cm ، A = 18 x 7 = 126 cm^2.

Exercises on Unit 5

Lesson 1

1. a) seven times ، six times.
   b) three times ، eight times.
   c) 4 x 9 = 36 ، nine times.
   d) 3 x 7 = 21 ، seven times.
   e) 16 , 8 , 16 , 2 f) 56 , 7 , 56 , 8
2. a) 18 is double 9 b) 25 is five times 5
   c) 27 is nine times 3 d) 28 is seven times 4
   e) 40 is five times 8 f) 63 is seven times 9
   g) 72 is nine times 8
3. a) 6 x 9 = 54 b) 5 x 2 = 10
   c) 4 x 8 = 32 d) 3 x 3 = 9
   e) 8 x 7 = 56 f) 5 x 5 = 25
   g) 7 + 7 + 7 + 7 + 7 h) 6 + 6 + 6 + 6 + 6 + 6
   i) 8 + 8 + 8 + 8 j) 9 + 9 + 9
   k) 2 + 2 + 2 + 2 + 2 l) 1 + 1 + 1
4. a) 45 is 5 times 9. b) 8 is 2 times 4.
   c) 36 is 6 times 6. d) 24 is 3 times 8.
   e) 21 is 7 times 3. f) 20 is 4 times 5.
   g) 56 is 8 times 7. h) 18 is 9 times 2.
5. a) | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
   b) | 5 | 5 | 5 |
   c) | 3 | 3 | 3 | 3 | 3 | 3 |
   d) | 9 | 9 | 9 | 9 |
   e) | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
   f) | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
   g) | 5 | 5 | 5 | 5 |
   h) | 2 | 2 | 2 | 2 | 2 | 2 |

6 a 12 is four times 3 — b 30 is six times 5.
c 8 ، 24 — d 4 x 5
e 3 x 8 — f 10 + 10 + 10
g 9 + 9 + 9 — h 32 is 4 times 8
i 30 is six times 5

j

3	3	3	3

7 a triple. — b double.
c 30 ، 10 — d 36 ، 9
e 48 ، 8 — f triple.
g 6 x 9 — h 9
i 8 + 8 + 8 + 8 + 8 — j 4 + 4 + 4
k 24 ، 4 — l 6 ، 2

Worksheet 1

1 a 98,765,432 — b triple.
c 100 — d 8
e 9 + 9

2 a 700,000 — b 4 x 7
c 14 ، 35 , Associative.
d 6 x 7 — e 24

3 a < — b =
c = — d > — e >

4 a 10 ، 5 ، 2 — b 16 ، 2 ، 8
c 24 ، 8 ، 3

Lessons 2&3

1 a x = 5 x 3 — b y = 6 x 7
c z = 8 x 3 — d a = 4 x 9
e b = 2 x 6 — f 36 = 4 x d
g 28 = 7 x m — h 35 = 5 x n
i 48 = 6 x k — j 49 = f x 7
k 64 = p x 8 — l 42 = a x 6
m 36 = b x 4

2 a x = 3 x 5 = 15 — b p = 3 x 4
c A = 4 x 6 — d 45 = 5 x a
e b = 7 x 3

3 a 35 ÷ 5 = 7 — b 48 ÷ 8 = 6
c 45 ÷ 9 = 5 — d 30 ÷ 6 = 5
e 14 ÷ 7 = 2 — f 54 ÷ 9 = 6
g 48 — h 18
i 24 — j 10

4 a x = 6 x 3 ، x = 18
b y = 4 x 7 ، y = 28
c z = 3 x 8 ، z = 24
d m = 5 x 9 ، m = 45
e 45 = 9 x a ، a = 45 ÷ 9 = 5
f 40 = 5 x b ، b = 40 ÷ 5 = 8
g 12 = 3 x m ، m = 12 ÷ 3 = 4
h 21 = 7 x n ، n = 21 ÷ 7 = 3

5 a 24 = 3 x a — b 56 = 7 x b
c x = 5 x 2 — d y = 7 x 3
e 18 ÷ 3 = 6 — f 42 ÷ 6 = 7
g 28 ÷ 4 = 7 — h 54

6 a 9 = 3 x a ، a = 9 ÷ 3 = 3
b 18 = 3 x b ، b = 18 ÷ 3 = 6
c 15 = a x 5 ، a = 15 ÷ 5 = 3
d 36 = m x 6 ، m = 36 ÷ 6 = 6
e x = 2 x 8 ، x = 16
f y = 5 x 20 ، y = 100

7 a a = 3 x 4 — b n = 3 x 6
c 15 — d x = 3
e 4 — f four times 2

Worksheet 2

1 a 3,000,025,200 — b 6 times.
c P = 4L. — d 24
e 8 x 4

2 a 500,000,000 — b 6 x a
c 35 , Commutative.
d 9 — e 702,080,300

3 200,755 < 360,450 < 450,005 < 850,600

4 a 12 = 4a — b 20 = 5 x m
c 16 = 8y — d 54 = 9z

Lessons 4-6

1 a 5 — b 6 — c 0

d 0 e 40 f 600
g 7,000 h 300 i 240
j 4,000 k 1,500 l 24,000
m 30,000 n 1,500 o 210,000
p 1,000,000 q 40,000 r 120,000
s 15,000 t 564,000

2 a 3 b 7 c 6
d 12 e 9 f 4
g 0 h 0 i 8
j 100 k 9 l 40
m 40 n 1,000 o 17
p 30 q 50 r 400
s 900 t 500 u 600
v 1,000 w 1,000 x 145

3 a > b = c >
d = e = f >
g = h > i >
j < k = l <
m > n = o <
p =

4 1 (b) 2 (d) 3 (a)
4 (e) 5 (c)

5 a 20 b 200 c 40
d 9 e 60 f 500

6 2 x 100 = 200 mm.

7 200 x 6 = 1,200 pounds.

8 90 x 20 = 1,800 piasters.

9 30 x 5 = 150 books.

10 3 x 4 = 4 x 3 2 x 6 = 6 x 2

11 3 x 8 = 8 x 3 4 x 6 = 6 x 4

Worksheet 3

1 a 40 b 4
c 1,000 d 6 m = 48
e 85

2 a 9,876,543 b 300,000
c 449,999,999 d 500
e 1

3 a 90,001 b 35,182
c 4,000 d 30,000

4 10 x 2 = 20 m.

Lessons 7&8

1 a (6 x 2) x 10 = 12 x 10 = 120
b (5 x 4) x 6 = 20 x 6 = 120
c (8 x 5) x 5 = 40 x 5 = 200
d (10 x 6) x 8 = 60 x 8 = 480
e 8 x (6 x 5) = 8 x 30 = 240
f 10 x (6 x 9) = 10 x 54 = 540
g 5 x (2 x 10) = 5 x 20 = 100
h 8 x (10 x 10) = 8 x 100 = 800

2 a 7 ، 2 b 9 ، 7
c 2 ، 8 d 7 ، 10
e 20 ، 12 f 2 ، 8
g 22 ، 35 h 18 ، 25

3 a 100 b 400 c 50
d 100 e 5 f 4,000
g 50 h 2 i 600
j 20,000 k 40,000 l 50,000

4 a 6 x (2 x 10) = (6 x 2) x 10 = 12 x 10 = 120
b 9 x (2 x 100) = (9 x 2) x 100 = 18 x 100 = 1,800
c 7 x (3 x 1,000) = (7 x 3) x 1,000
= 21 x 1,000 = 21,000
d 2 x 80 = 2 x (8 x 10) = (2 x 8) x 10 = 16 x 10
= 160
e 3 x 50 = 3 x (5 x 10) = (3 x 5) x 10 = 15 x 10
= 150
f 9 x 500 = 9 x (5 x 100) = (9 x 5) x 100
= 45 x 100 = 4,500
g 8 x 2,000 = 8 x (2 x 1,000) = (8 x 2) x 1,000
= 16 x 1,000 = 16,000
h 3 x 70 = 3 x (7 x 10) = (3 x 7) x 10 = 21 x 10
= 210
i 9 x 80 = 9 x (8 x 10) = (9 x 8) x 10 = 72 x 10
= 720

j) 6 x 300 = 6 x (3 x 100) = (6 x 3) x 100
= 18 x 100 = 1,800

k) 8 x 700 = 8 x (7 x 100) = (8 x 7) x 100
= 56 x 100 = 5,600

l) 9 x 3,000 = 9 x (3 x 1,000) = (9 x 3) x 1,000
= 27 x 1,000 = 27,000

m) 3 x 2,000 = 3 x (2 x 1,000) = (3 x 2) x 1,000
= 6 x 1,000 = 6,000

5
a) 10 b) 100
c) 4 d) 6
e) 50 f) 300
g) 12 h) 32
i) 40 ، 240 j) 20 ، 120
k) 120 x 10 = 1,200 l) 2 ، 9 ، 54
m) 8 ، 4 ، 320 n) 20 ، 30 ، 600

6
a) 7 b) 16
c) 25 d) 100
e) 900 f) 16
g) 100 h) 5

7
a) > b) = c) >
d) = e) < f) <
g) < h) < i) =
j) = k) < l) >

8
1) (b) 2) (e) 3) (a)
4) (c) 5) (d)

9 3 x 4 x 3 = (3 x 4) x 3 = 12 x 3 = 36 pens.

10 4 x 4 x 2 = 4 x (4 x 2) = 4 x 8 = 32 books.

11 5 x 4 x 3 = (5 x 4) x 3 = 20 x 3 = 60 bottles.

12 10 x 5 x 8 = 10 X (5 x 8) = 10 x 40 = 400 books.

Worksheet 4

1
a) 100 b) 330,003,000
c) 1,000 d) 10
e) 5

2
a) 2 x 5 b) 200
c) 900,000,00 d) 800,603,402
e) 3 ، 10 ، 24 ، 240

3 405,000,002 ، 405,200,000 ، 450,000,002 ، 450,200,000

4
a) (3 x 3) x 3 = 9 x 3 = 27
b) (4 x 4) x 3 = 16 x 3 = 48

Exercises on Unit 6

Lessons 1&2

1
a) 1 ، 2 ، 5 ، 10
b) 1 ، 2 ، 3 ، 4 ، 6 ، 12
c) 1 ، 3 ، 5 ، 15
d) 1 ، 2 ، 3 ، 6 ، 9 ، 18
e) 1 ، 2 ، 4 ، 5 ، 10 ، 20
f) 1 ، 2 ، 3 ، 4 ، 6 ، 8 ، 12 ، 24
g) 1 ، 2 ، 3 ، 4 ، 6 ، 9 ، 12 ، 18 ، 36
h) 1 ، 2 ، 4 ، 5 ، 8 ، 10 ، 20 ، 40
i) 1 ، 17
j) 1 ، 3 ، 5 ، 9 ، 15 ، 45

2
a) 1 ، 13
b) 1 ، 2 ، 3 ، 4 ، 5 ، 6 ، 10 ، 12 ، 15 ، 20 ، 30 ، 60
c) 1 ، 2 ، 4 ، 7 ، 14 ، 28
d) 1 ، 2 ، 7 ، 14
e) 1 ، 2 ، 5 ، 10 ، 25 ، 50
f) 1 ، 2 ، 4 ، 8 ، 16 ، 32

3 Answer by yourself.

4

Number	Factors of the Number	Prime Number or Not
6	1 ، 2 ، 3 ، 6	Not a prime number
19	1 ، 19	a prime number
22	1 ، 2 ، 11 ، 22	Not a prime number
31	1 ، 31	a prime number
14	1 ، 2 ، 7 ، 14	Not a prime number

30	1 ، 2 ، 3 ، 5 ، 6 ، 10 ، 15 ، 30	Not a prime number
25	1 ، 5 ، 25	Not a prime number
23	1 ، 23	a prime number
11	1 ، 11	a prime number

5

Number	The Factors of the Number				
	2	3	6	9	5
8	✓	✗	✗	✗	✗
9	✗	✓	✗	✓	✗
25	✗	✗	✗	✗	✓
12	✓	✓	✓	✗	✗
15	✗	✓	✗	✗	✓
10	✓	✗	✗	✗	✓
18	✓	✓	✓	✓	✗
27	✗	✓	✗	✓	✗
28	✓	✗	✗	✗	✗
32	✓	✗	✗	✗	✗
30	✓	✓	✓	✗	✓
36	✓	✓	✓	✓	✗
45	✗	✓	✗	✓	✓
60	✓	✓	✓	✗	✓
90	✓	✓	✓	✓	✓

6
- a 2 ، 3 ، 5 ، 7
- b 11 ، 13 ، 17 ، 19
- c 23 ، 29
- d 31 ، 37
- e 41 ، 43 ، 47
- f 53 ، 59
- g 61 ، 67
- h 71 ، 73 ، 79
- i 83 ، 89
- j 97

7
- a 37
- b 24
- c 21
- d 31
- e 59
- f odd ، 2
- g 2
- h 3
- i 2
- j 41 ، 43 ، 47
- k prime number.
- l 2
- m one factor.
- n more than two factors.

9
- a 17
- b 1
- c 2
- d 3
- e 2
- f two factors.
- g prime.
- h one factor.
- i more than two factors.
- j two factors.
- k 4
- l 5
- m 20
- n odd.

Worksheet 1

1
- a 6,217
- b 4,619
- c 40,000
- d 32 ، 3,200

2
- a 2
- b 45,040,005
- c Associative.
- d 15
- e more than two factors.

3
- a 3
- b 800,302,005
- c 1,000
- d 61 ، 67
- e 3

4
- a 1 ، 2 ، 4 ، 5 ، 8 ، 10 ، 20 ، 40
- b 1 ، 2 ، 4 ، 7 ، 14 ، 28

Lesson 3

1
- a (G.C.F.) = 5
- b (G.C.F.) = 6
- c (G.C.F.) = 2
- d (G.C.F.) = 4
- e (G.C.F.) = 7
- f (G.C.F.) = 12
- g (G.C.F.) = 16
- h (G.C.F.) = 12

2
- Largest number of groups (G.C.F.) = 7
  Number of girls in each group = 28 ÷ 7 = 4 girls.
  Number of boys in each group = 21 ÷ 7 = 3 boys.

3
- Largest number of snacks (G.C.F.) = 8
  Number of croissants = 24 ÷ 8 = 3 croissants.
  Number of sweets = 16 ÷ 8 = 2 sweets.

4
- Largest number of flower arrangements (G.C.F.) = 7
  Number of red flowers = 21 ÷ 7 = 3 flowers.
  Number of blue flowers = 14 ÷ 7 = 2 flowers.

Worksheet 2

1
- a 26,000,000
- b 3
- c 45,000
- d 30 x 80 = 2,400
- e 600,420,320

2
- a 304,050
- b 4
- c 100

d 20 e 50

3 (G.C.F.) = 15. 4 5 x 20 = 100 minutes.

Lessons 4-6

1 & 2 Answer by yourself.

3 0 ، 6 ، 12 ، 18

4 0 ، 20 ، 40

5 0 ، 42 ، 84

6 0 ، 12 ، 24 ، 36 ، 48

7 0 ، 10 ، 20 ، 30 ، 40

8 0 ، 24 ، 48

9 a 0, 8, 16, 24, 32
b 0, 9, 18, 27, 36
c 0, 7, 14, 21, 28
d 6, 12 e 36, 72 f 40, 80
g 42, 6, 7, 6, 7, 42
h 5 x 9, 45, 5, 9, 45
i 24, 24, 8,3, 24 j 24 k 30
l 45 m 21
n 8 is a multiple of 4 and 2.
or 2 and 4 are factors of 8.
o 10 is a multiple of 2 and 5.
or 2 and 5 are factors of 10.
p 60 ، 72 ، 84

10 a 2 b 16 c 12
d 24 e multiple. f 21
g 24 h 20 i 15
j 0

Worksheet 3

1 a 8,000,080 b 4
c Millimeter. d 400
e 4 milliards (billions).

2 a Millions. b 100,000 c 46,000
d 5 e 24

3 Common multiples: 0 ، 12 ، 24

4 10 : 00 – 8 : 45 = 1 : 15.

Exercises on Unit 7

Lesson 1

1 a 105 b 70 c 126
d 130 e 78 f 172
g 162

2 a 492 b 228 c 504
d 644 e 152 f 135
g 171 h 891 i 180
j 276

3 110 4 522 5 510

Worksheet 1

1 a 9,999,998 b 3 c 10
d 48 e 10

2 a 6 b 5,000 c 6,542
d 8 X 1,000,000 + 5 X 10,000 + 6 X 100 + 7 X 1
e 4 times.

3 a 26 X 5 = 100 + 30 = 130
b 69 X 3 = 180 + 27 = 207

4 a 623 b 448

Lesson 2

1 a 8 , 9 b 3 , 4 c 3 , 6 , 5
d (6 X 3) + (6 X 4) + (6 X 5)
e (6 X 200) + (6 X 90) + (6 X 3)
f (8 + 9 + 3) = (6 X 8) + (6 X 9) + (6 X 3)
g 2 X (700 + 30 + 9)

2 a 124 b 414 c 2,910
d 2,208 e 2,492 f 7,692
g 29,358 h 27,244 i 18,360
j 24,015

3 a 1,000 b 3,072 c 5,661
d 4,942 e 11,825 f 7,698
g 16,398 h 14,035

4 1280 X 3 = 3,840 5 525 X 7 = 3,675

6 930 X 5 = 4,650 7 185 X 8 = 1,480

Worksheet 2

1. a) n = 3 X 8 b) 36 c) 3,030,000,300 d) Commutative e) 5,000
2. a) 36 b) 500 c) 4,500 d) 5 e) 9 : 40
3. a) 864 b) 1960
4. 45,512

Lessons 3,4&5

1. a) 4 b) 564 c) 9,532
   d) 6,483 e) 9,050 f) 6,600
   g) 4003 h) 700 + 80 + 5
   i) 900 + 20 + 7 j) 7,000 + 800 + 50 + 9
   k) 8,000 + 300 + 20 + 4
   l) 6,000 + 200 + 1
   m) 300 + 9 n) 9,000 + 6
   o) 8,000 + 200 p) 3,000 + 10
2. a) 1,356 b) 2,900 c) 1,308
   d) 7,488 e) 3,762 f) 55,368
   g) 8,724 h) 36,168
3. a) 280 b) 345 c) 159
   d) 1,664 e) 5,010 f) 1,195
   g) 10,472 h) 13,188 i) 40,984
   j) 1,218 k) 3,621 l) 12,032
4. a) 135 , 150 b) 702 , 720
   c) 2,136 , 2,400 d) 27,248 , 24,000
   e) 40,070 , 40,000
5. a) > b) = c) <
   d) = e) > f) <
   g) < h) < i) =
6. 135 X 6 = 810 pounds.
7. 6,250 X 8 = 50,000 pounds.
8. 24 X 7 = 168 hours.

Worksheet 3

1. a) 10 b) 473 c) 4
   d) 5,023 e) 16
2. a) 6 b) 40 c) 17
   d) Thousands e) 2 , 50 , 400
3. a) > b) = c) =
   d) < e) >
4. 54,005,000 , 54,000,500 , 45,500,000 , 45,000,050
5. 64 X 8 = 512 seats.

Lesson 6

1. a) 2,132 b) 750 c) 2,280
   d) 3,420 e) 5,760 f) 1,480
2. a) 7,470 b) 2,100 c) 960
   d) 680 e) 5,160 f) 3,400
3. a) 1,350 b) 1,360 c) 2,320
   d) 3,780 e) 2,970 f) 4,400
4. a) 720 b) 1,120 c) 1,000
   d) 3,780 e) 4,400 f) 2,880
   g) 5,700 h) 3,600
5. 95 X 20 = 1,900 piasters.
6. 20 X 35 = 700 kilograms.
7. 65 X 20 = 1,300 pounds.

Worksheet 4

1. a) 81 b) 70 c) 120
   d) Distributive e) 86,000
2. a) 59 b) 1, 3, 7, 21 c) 5,000
   d) 8 e) 6,030,403
3. a) 61,100 b) 55,513 c) 3128
   d) 1,350
4. 20 X 18 = 360 apartments.

Lessons 7&8

1. a) 1,620 b) 1,820 c) 1,708
   d) 2,553 e) 4,275 f) 2,047
   g) 5,092 h) 2,448
2. a) 864 b) 3,312 c) 1,152
   d) 3,237 e) 2,548 f) 3,900
3. a) 1,820 b) 3,627 c) 2,325
   d) 468 e) 2,484 f) 3,024
4. a) 3,686 b) 1,190 c) 1,512
5. 16 X 95 = 1,520 piasters.
6. 55 X 45 = 2,475 pounds.
7. 12 X 45 = 540 pounds.

Worksheet 5

1. a 350,000,350 b = c 986,310
   d 34 X 25 e 5
2. a 3 b 0 , 6 , 12 , 18
   c Millions
   d 22 e 9,005,006,002
3. a 3,400 b 1,080 c 3,7432
   d 81,000
4. 24 X 30 = 720 hours.

Lesson 9

1. 56 X 6 = 336 pounds, 24 X 3 = 72 pounds.
   336 + 72 = 408 pounds.
2. 98 X 12 = 1,176 pounds, 80 X 10 = 800 pounds.
   1.176 + 800 = 1,976 pounds.
3. 300 – 55 = 245 km, 240 + 300 + 245 = 785 km.
4. 65 X 3 = 195 seedlings , 55 X 2 = 110 seedlings.
   195 + 110 = 305 seedlings.
5. 27 X 62 = 1674 accidents, 1674 X 7 = 11718 accidents.
6. 27 X 7 = 189 pages, 62 X 7 = 434 pages.
   198 + 434 = 623 pages.
7. 65 + 55 = 120 tickets, 500 – 120 = 380 tickets.
8. 126 X 3 = 378 km, 378 + 12 = 390 km.
9. 96 X 12 = 1,152 stickers, 1,152 – 300 = 852 stickers.
10. 60 X 24 = 1,440 minutes, 1,440 X 7 = 10,080 minutes.

Worksheet 6

1. a 5,596 b = c 0
   d 72 e 3 gm
2. a 50 b 100,000 c 45 = 9a
   d 12 e 386
3. a 2,075 b 2,880 c 912
   d 40,500
4. 12 X 3 = 36 pounds, 25 X 7 = 175 pounds.
   36 + 175 = 211 pounds.

Lessons 10&11

1. a 8 , 4 , 2 , 0 b 9 , 2 , 4 , 1
   c 15 , 5 , 3 , 0 d 28 , 4 , 7 , 0
   e 36 , 6 , 6 , 0 f 35 , 8 , 4 , 3
   g 25 , 4 , 6 , 1 h 31 , 5 , 6 , 1
   i 42 , 8 , 5 , 2 j 48 , 6 , 8 , 0
2.

	Equation	Related Fact	Quotient
a	400 ÷ 4	4 ÷ 4 = 1	100
b	8,000 ÷ 2	8 ÷ 2 = 4	4,000
c	90,000 ÷ 3	9 ÷ 3 = 3	30,000
d	420 ÷ 7	42 ÷ 7 = 6	60
e	350 ÷ 5	35 ÷ 5 = 7	70
f	3,600 ÷ 4	36 ÷ 4 = 9	900
g	27,000 ÷ 9	27 ÷ 9 = 3	3,000
h	240,000 ÷ 8	24 ÷ 8 = 3	30,000
i	60,000 ÷ 3	6 ÷ 3 = 2	20,000
j	18,000 ÷ 6	18 ÷ 6 = 3	3,000

3. a 30 b 8,000 c 300
   d 3,000 e 90 f 80,000
   g 360 h 90,000 i 400
   j 700,000
4. a > b > c >
   d = e > f >
   g > h < i <
   j <
5. a 800 b 7,000 c 40
   d 20,000 e 5,000
6. 15 ÷ 4 = 3 R 3
7. 21 ÷ 5 = 4 R 1
8. a 32 ÷ 9 = 3 R 5 b 32 ÷ 3 = 10 R 2
   c 32 ÷ 4 = 8 R 0 d 32 ÷ 7 = 4 R 4
9. 52 ÷ 6 = 8 R 4 , 9 boxes are needed
10. 12,000 ÷ 3 = 4,000 pounds.
11. 24,000 ÷ 6 = 4,000 pounds.

Worksheet 7

1. a 300 b < c 8
   d 8,045 e 50
2. a 9 b 4,000 + 200 + 50 + 6
   c 1 , 2 , 4 , 7 , 14 , 28

d 2 e 4,000

3 a 45 , 6 , 7 , 3 b 32 , 8 , 4 , 0 c 14 , 2 , 7 , 0
d 23 , 5 , 4 , 3 e 68 , 8 , 8 , 4

4 240 ÷ 8 = 30 students.

Lesson 12

1 a 14 b 16 c 49
d 18 R 2 e 12 R 4 f 13 R 3
g 146 R 3 h 146 i 123
j 800 k 90

2 a 14 R 5 b 109 c 23
d 123

Worksheet 8

1 a 0 b 3 c 9,876,534
d 4,015 e 20

2 a 1 , 2 , 4 , 8 , 16 b Millions
c 9 d 30 e 9,025,003

3 a 19 b 24

4 85 ÷ 5 = 17 candy bars.

Lesson 13

1 a 13 b 18 c 11 R 4
d 156 e 144 R 1 f 275
g 1,614 h 717 i 1,358 R2
j 507 k 701 R 3 l 1,201

2 a 92 ÷ 4 b 53 ÷ 3 c 1,058 ÷ 6
d 688 ÷ 5 e 2,802 ÷ 6

3 96 ÷ 8 = 12 m.

4 1,548 ÷ 6 = 258

5 175 ÷ 5 = 35 tourists.

Worksheet 9

1 a 50,000 b > c 9
d millimeter e 1,000

2 a 20 b 44 c 3
d 6 e 26

3 a 18 b 49 c 590 R 2

4 72 ÷ 6 = 12 students.

Lessons 14&15

1 a 60 and 80 , 30 and 40.
b 60 and 90 , 20 and 30.
c 120 and 160 , 30 and 40.
d 100 and 150 , 20 and 30.
e 300 and 600 , 100 and 200.
f 700 and 1,400 , 100 and 200.
g 2400 and 3,000 , 400 and 500.
h 3200 and 4,000 , 400 and 500.
i 5,000 and 10,000 , 1,000 and 2,000.
j 6,000 and 9,000 , 2,000 and 3,000.

2 a 13 b 16 c 23 R2
d 34 e 75 f 49 R3
g 138 h 248 i 136 R2
j 157 k 248 R 4 l 805
m 4878 n 709 o 3008

3 a 17 , 10 and 20 , 2 , 17.
b 27 , 20 and 30 , 2 , 27.
c 124 , 100 and 200 , 3 , 124.
d 714 , 700 and 800 , 3 , 714.
e 3,275 R 2 , 3,000 and 4,000 , 4 , 3,275 R 2.

4 784 ÷ 7 = 112 passengers.

5 567 ÷ 3 = 189 books.

6 144 + 216 = 360 , 360 ÷ 8 = 45 students.

Worksheet 10

1 a 40,000 b > c 1,000
d 110 e 5

2 a 20 b 27 c 7,089
d 23 e 65

3 a 23 b 68 c 1,213

4 215 ÷ 5 = 43 rooms.

Lesson 16

1 3 X 12 = 36 pencils. , 4 X 28 = 112 pencils.
112 + 36 = 148 pencils. , 148 ÷ 4 = 73 pencils.

2 135 + 195 = 330 pages. , 500 – 330 = 170 pages.

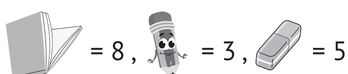
3 3 X 376 = 1,128 pages.

4. 19 + 27 + 155 = 199 cones.
5. 8 X 1,421 = 11,368 tourists.
6. 7 X 9 = 63 , 5 X 10 = 50 , 63 + 50 = 113
7. 682 + 117 = 799 gems , 799 – 45 = 754 gems.
   754 + 130 = 884 gems.
8. 2 X 14 = 28 LE. , 2 X 22 = 44 LE.
   28 + 44 = 72 LE. , 4 X 72 = 288 LE.
9. 352 ÷ 8 = 44 toys.
10. 164 + 20 = 184 persons. , 184 ÷ 8 = 23 persons.

Worksheet 11

1. a 24,000 b = c 3,000,030,300 d 11 e 6
2. a 17 b 26,000 c 100,000 d 6 , 270 e 26 , 26
3. a 60,600 b 66,214 c 928 d 178
4. 523,205 , 352,250 , 352,025 , 253,520
5. 5 X 81 = 405 girls. , 405 + 81 = 486 students.
   486 ÷ 9 = 54 students.

Exercises on Unit 8

1. a 27 b 36 c 0 d 5 e 5 f 10 g 10 h 22 i 10 j 23 k 90 l 240 m 3 n 1 o 10 p 4 q 2 r 30 s 48 t 40
2. a 47 b 50 c 27 d 23 e 25 f 12 g 3 h 4 i 11 j 12 k 11 l 30 m 1 n 1 o 7 p 13
3. a 23 b 8 c 180 d 2
4. a 34 = 5 , = 3 , = 4
   b 31  = 8 , = 3 , = 5
   c 30 = 3 , = 4 , = 6
   d 28 = 7 , = 3 , = 8
   e 240 = 2 , = 5 , = 3
   f 32 = 10 , = 6 , = 8
   g 26 10 , = 2 , = 6
   h 32 = 4 , = 5 , = 6
5. a 51 b 28 c 11 d 39 e 8 f 6 g 1 h 3
6. a 86 b 9 c 16 d 21 e 10 f 52 g 18 h 3
7. a 194 – 50 = 144 persons , 144 ÷ 9 = 16 microbuses.
   b 18 X 6 = 108 balloons , 108 ÷ 8 = 13 R 4 balloons.
   c 8 X 6 = 48 eggs , 48 – 38 = 10 eggs.
   d 12 + 28 + 40 = 80 m , 80 ÷ 4 = 20 m
   e 42 ÷ 3 = 14 , 14 – 4 = 10 biscuits.
   f **Model (A):** 15 X 48 = 720 nails,
   15 X 24 = 360 metal rings,
   15 X 21 = 315 pieces of wood.
   Model (B): 7 X 52 = 364 nails,
   7 X 32 = 224 metal rings,
   7 X 26 = 182 pieces of wood.
   Total: 720 + 364 = 1,084 nails,
   360 + 224 = 584 metal rings,
   315 + 182 = 497 pieces of wood.

Correcting Typos

Exercises Book 4th Primary First Term

Page Number	Question Number	Wrong	Correction
14	**5-e**	Ones	Thousands
22	**5**	Expanded Form	Standard Form
25	**7-b**	Eight hundred seventy million, fifty thousand, three hundred two.	Eight hundred seven million, fifty thousand, three hundred two.
27	**3-4**	Three hundred thirty.	Three hundred thousand thirty.
	3-5	(3 X 100,000) + (3 X 1,000)	(3 X 100,000) + (3 X 10,000)
	3-(a)	Three hundred thousand three hundred.	Three hundred million three hundred.
31	**8-a**	ninety	nine
42	**1-C**	1,000	100
45	**3-C**	0 245	0 + 245
	3-j	100 + 250 = 350	100 + 150 = 250
84	**2-C**	Centimeters – millimeters	Centiliters – millilitres
87	**7**	6	600
99	**4**	x x x x x x x x x x 60 75 90 105 120 135 150	
104	**1**	Solve each problem	Find the perimeter
119	**3**	4 cm 4 cm ....m ....m 4 cm 8 cm	3 m .... m ....m 8 m 4 m 8 m
120	**4**	width and length	Side length

Page Number	Question Number	Wrong	Correction
142	**4–b**	4 X 100	4 X 1,000
144	**1–d**	8 + m = 48 , 8m = 48	6 + m = 48 , 6m = 48
147	**4–g**	16 X 100	16 X 1,000
183	**4**	7 X 80 = 56 7 X 9 = 63	8 X 80 = 640 8 X 9 = 72
184	**2–a**	(3 X 3)	(3 X 2)
	2–b	4 X 4	4 X 5
185	**2–d**	639	936

Correcting Typos
Main Book 4th Primary First Term

Page Number	Question Number	Wrong	Correction
45	**1–b**	42–58	58–42
141	**1–d**	6	9
199	**2–d**	+ x = 18	+ + = 18